

JPRS-TND-86-011

13 JUNE 1986

Worldwide Report

NUCLEAR DEVELOPMENT
AND
PROLIFERATION

FBIS FOREIGN BROADCAST INFORMATION SERVICE

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13 JUNE 1986

WORLDWIDE REPORT

NUCLEAR DEVELOPMENT AND PROLIFERATION

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AUSTRALIA

BRIEFS

JAPAN URGED TO BUY MORE URANIUM--The prime minister, Mr Hawke, has urged Japan to more than double its intake of Australian uranium within 2 years. He made the request in Tokyo where he is spending 5 days discussing trade issues with Japanese leaders. Japanese officials say Mr Hawke met the international trade and industry minister, Mr Watanabe, and asked Japan to raise its share of Australian uranium exports from the present 13 percent to 30 percent by 1988. The increase would be timed to coincide with the start of production at the giant Roxby Downs uranium and gold mine in the far north of South Australia. According to Japanese officials, Mr Watanabe wanted Australia to remain a stable uranium supplier from a national security standpoint, but he did not make any specific commitment. Japan has contracted to import a total of 190,000 tons of uranium from Australia by the mid 1990's. Mr Hawke also said he had received assurances from his Japanese counterparts, Mr Nakasone, that Japan will not enter into any bilateral mineral trade agreement that would damage Australia. Australian officials in Canberra are reported to have been concerned that Tokyo was preparing to strike a deal with the United States on coal imports. [Text] [Melbourne Overseas Service in English 0830 GMT 17 May 86 BK] /6662

CSO: 5100/4305

JAPAN

REAGAN, KOHL DISCUSS NUCLEAR SAFETY, TERRORISM

OW040804 Tokyo KYODO in English 0743 GMT 4 May 86

[Text] Tokyo, May 4 KYODO -- U.S. President Ronald Reagan and West German Chancellor Helmut Kohl agreed Sunday that it is necessary to establish international standards for safety in nuclear reactors, West German Government spokesman Friedhelm Ost said. The two leaders agreed that the Chernobyl nuclear power plant accident in the Soviet Ukraine was an international issue, and that coordinated action is necessary.

In discussions on international terrorism, Reagan advocated coordinated action to isolate Libyan leader Colonel Mu'ammur al-Qadhdhafi by cutting his contacts in various fields. Kohl said that West Germany will take steps to tighten security for U.S. forces based there.

On arms control, the two sides discussed returning chemical weapons stored in West Germany to the United States. Spokesman Ost said that negotiations are ongoing, but made no further comment.

Speaking on trade policy, Reagan said he would like to make a new GATT round one of the major issues at the summit because of protectionist tendencies in the U.S.

/9274

CSO: 5160/054

JAPAN

CABINET MEETS TO REVIEW RADIATION REPORT

AFP Report

HK040352 Hong Kong AFP in English 0327 GMT 4 May 86

[Text] Tokyo, May 4 (AFP) -- The government convened an emergency cabinet meeting Sunday after Japanese scientists said they had detected abnormally high radiation levels in central Japan, officials said. The Science and Technology Agency identified the radiation as Iodine 131, and agency officials said they believed it was linked to the Chernobyl nuclear plant disaster in the Soviet Union eight days ago.

The radiation was detected in rain water samples in Tokyo, Kanagawa and Fukui Prefectures, but agency officials said the levels were not high enough to be harmful to human beings.

The cabinet meeting was expected to study the report and detail immediate counter-measures against the radioactive contamination, the officials said.

The agency, in another report, said drinking water, food and soil sampled by the Japanese Embassy in Moscow were found also to have been contaminated by radioactivity. The Moscow samples contained similar radioactive substances to those found in the tests carried out in Japan, but except for that of the soil, the contamination was not believed to be dangerous to the human body, agency officials said.

The U.S. Presidential spokesman said that the United States delegation headed by President Ronald Reagan here for the seven-nation economic summit had been informed of the findings of the Japanese scientists. Specialists and scientists had attended the Japanese Cabinet meeting which was held at 7 a.m. [2200 GMT Saturday], the spokesman, Larry Speakes said. He added that the Japanese had said that there was no danger for human beings in the levels detected but that people had been advised not to drink rain water and not to wash their vegetables in rain water.

Government Announcement

OW040528 Tokyo KYODO in English 0335 GMT 4 May 86

[Text] Tokyo, May 4 KYODO -- Radioactivity scattered by the Soviet Chernobyl nuclear reactor meltdown has reached Japan, and contaminated rain fell in Tokyo, Kanagawa and Chiba Prefectures Saturday, the government announced. The announcement followed an emergency cabinet-level meeting Sunday morning following a report of the contamination of rain water sampled Friday and Saturday.

The level of the contamination is said to be harmless to the human body. But the detection came as a shock to the government, which had declared that Japan, 8,000 to 9,000 kilometers from the Soviet nuclear mishap in the Ukraine, would be free from radioactive fallout from the accident.

The nuclear reactor meltdown is now thought to be of a much greater scale than was originally believed, and the fallout may have covered the entire northern hemisphere, scientific observers said. Dust sampled from the atmosphere in Fukui Prefecture was also found to have been contaminated by radioactive substances.

According to the announcement, the rain water samples contained radioactive iodine 131, with readings in picocuries (a one trillionth of a curie) per liter of 4,000 in Chiba, 1,700 in Tokyo and 263 in Kanagawa. In Fukui, the reading was 0.13 picocuries per cubic meter of dust floating in the air and 690 per cubic meter of fallen dust.

According to Science and Technology Agency officials, the contamination levels are so low, however, that a person would have to drink an average of 2.2 liters of the rain water that fell over Chiba every day for the next six months before it went beyond the tolerable level.

The Science and Technology Agency first received reports of the detection of iodine 131 after 1 a.m. Sunday from the Kanagawa Prefectural Hygiene Office. Later, the agency learned that sanitation officials of the Tokyo Metropolitan Office and Chiba Prefecture also had similar reports.

Yohel Kono, director general of the agency and a member of Prime Minister Yasuhiro Nakasone's Cabinet, received the formal report from his office at 5 a.m. Sunday. He called for an emergency meeting at 7 a.m. Officials of the Health and Welfare Ministry and the Meteorological Agency were summoned to the meeting. Kono said the radioactive iodine detected was not in amounts large enough to be harmful, but assured the nation that the government will continue to watch.

A senior official of the agency, meanwhile, admitted that he did not expect iodine 131 would appear in Japan so soon after the Chernobyl nuclear plant disaster. He said milk and vegetables are safe, but advised consumers to fully wash vegetables before they eat them.

White House spokesman Larry Speakes briefed American news reporters on the Japanese reports, assuring them it is safe to drink local tap water.

Japanese Government officials earlier believed that the Soviet nuclear power plant accident would not affect Japan. They said the radioactive substances released from the plant would have a hard time reaching the jet stream traveling 2,000 kilometers north of Kiev at an altitude of 10,000 meters. They also said that nuclear fission materials normally dissipate before they get to the upper atmosphere.

A Japanese scientific expert said he believed the amount of radioactive substances emanating from the Ukraine accident appears to be much more than that detected following America's Three Mile Island nuclear accident in 1979. He expressed the belief that the Soviet accident might have been far more worse than has been believed. The reports on the finding of iodine 131 came in the midst of a holiday-studded "golden week" in Japan, a time when many Japanese are on the road traveling to resort areas.

Weathermen across the nation have been showered with telephone calls inquiring about rain. Rain has been falling over much of Japan in the past two days, except for

northern and western parts of the country. The Weather Bureau forecast that the rainy weather will continue for the next few days.

In another related development, the Foreign Ministry said it has instructed its embassies in the Soviet Union and Poland to advise Japanese nationals to take precautionary measures. The measures included voluntary restraints on travel to the Kiev area and a survey on whether Japanese citizens in the area have been affected by the accident.

The Foreign Ministry has also advised Japanese nationals not to drink milk and wash vegetables and fresh fruit.

/9274

CSO: 5160/052

JAPAN

OFFICIALS DISCUSS AFTEREFFECTS OF USSR NUCLEAR ACCIDENT

Government Responds

OW300423 Tokyo KYODO in English 0411 GMT 30 Apr 86

[Text] Tokyo, April 30 KYODO -- Japanese Government officials met Wednesday to discuss measures to deal with the aftereffects of a Soviet nuclear power plant accident. The meeting, decided to ask the Air Self-Defense Force to dispatch F-4 Phantom jetfighters to collect dust to determine whether nuclear radioactive fallout had reached Japan following a major accident at Chernobyl power plant north of Kiev in the Soviet Ukraine.

Officials of the Science and Technology Agency, the Ministries of Foreign Affairs, Agriculture, Forestry and Fisheries, Transport, and Defense, and Central Meteorological Agencies attended the Wednesday morning session, but admitted they did not have details on the accident. The accident at the Soviet nuclear power plant reportedly occurred on April 26.

The government instructed the Japanese Embassy in Moscow to obtain correct information. At the same time, officials asked the Soviet Embassy in Tokyo to release details on the accident, which was said to be far worse than another serious accident that occurred at the Three Mile Island power plant in the United States in 1979. Japan has also said it is ready to offer technical assistance if the Soviets ask for help. The Soviet Government has already applied for help from West Germany and Sweden.

Foreign Ministry sources, however, said that as of Wednesday morning the Soviet Government had not sought Japanese assistance for the accident. They said the latest mishap could have a major effect on Soviet foreign policy since it occurred shortly after Soviet leader Mikhail Gorbachev consolidated his domestic power base at the party convention in February.

The Natural Resources and Energy Agency set up a task force Wednesday morning and directed electric power companies to step up their safety measures for operating nuclear reactors. Japan has 31 nuclear power plants in operation, compared to 43 in the Soviet Union, which is currently the world's third largest nuclear power plant operator following the United States and France. The nine electric power companies which supply electricity across Japan, meanwhile, expressed concern about the unfavorable effect the Soviet accident will have on their power plant construction plans.

Electricity generated by nuclear power is less expensive than electricity generated by fossil fuel according to the electric companies, which would like to increase

dependence on nuclear power plants. About 30 nuclear power plants are under consideration for construction, 18 of which have already been approved by the Ministry of International Trade and Industry (MITI). The foreign ministry said 127 Japanese tourists were believed to be visiting Kiev as of Tuesday. But officials said they were not certain whether the tourists were in Kiev when the power plant accident occurred. The Soviet Government has issued a ban on travel to Kiev following the accident.

Public health officials in Kyoto and Osaka said no unusual amount of radioactivity had been detected as of Wednesday morning. Chief Cabinet Secretary Masaharu Gotoda said the Japanese Government is intently interested in the Soviet accident.

Japan Air Lines said it checked two jets that made stops in Moscow Tuesday in flights between Tokyo and Europe, but found no traces of radioactivity. One flight arrived in Narita from Paris and the other arrived in London from Narita Tuesday. Prime Minister Yasuhiro Nakasone told news reporters that the Tokyo summit of seven industrially advanced democracies May 4-6 may take up the issue of the Ukraine power plant accident. He said he had no new information.

Public 'Shocked'

OW300241 Tokyo KYODO in English 0223 GMT 30 Apr 86

[Text] Fukui, April 30 KYODO -- Residents in Fukui, the prefecture with the highest concentration of nuclear power plants in Japan, Wednesday reacted with shock to reports that more than 2,000 people died in the Soviet nuclear accident. "We can't say 'it is not our business'", Miwako Ogiso, leader of a local anti-nuclear movement said. Ms. Ogiso pointed that Fukui houses 11 of the 32 nuclear power plants in operation in Japan, the largest concentration in the country. "I can picture what it looks like -- hell," she said when told there were unconfirmed reports that 2,000 people had died because of the accident in the Chernobyl nuclear plant.

"Nuclear power is no longer safe," said Jinzo Isobe, leader of a local plaintiff group which has filed a suit to stop the development of fast-breeder nuclear reactors in Japan. Ms. Ogiso said her group plans to urge the local authorities to order a safety check of all nuclear plants in Fukui prefecture and review disaster contingency procedures.

The Natural Resources and Energy Agency says it has ordered nation-wide monitoring to check for possible increases in radiation levels, but an official in charge of atomic energy safety predicted there will be very little effect on Japan from the Soviet radiation leak. Meanwhile, radiation levels at Fukushima prefecture, north of Tokyo, are normal four days after the accident, the Fukushima prefecture atomic power center said Wednesday. The center has stepped up monitoring of radioactive fallout at the instruction of the Science and Technology Agency, a center spokesman said. He said the center, which has 18 monitoring stations in the prefecture, will file reports about radiation levels to the agency daily instead of monthly as in the past.

There are two nuclear power stations in the prefecture with maximum protection capacity of eight million kilowatt-hours, the largest in any single prefecture.

No Request for Assistance

OW300233 Tokyo KYODO in English 0222 GMT 30 Apr 86

[Text] Tokyo, April 30 KYODO -- Japan, a leading operator of nuclear power plants, has not received any formal request from the Soviet Union to help fight a deadly fire at a

malfunctioning nuclear power plant near Kiev, a Foreign Ministry official said Wednesday. He said the Japanese government has no immediate plan to send officials to the Soviet Union to keep tabs on developments concerning the nuclear accident.

Both the Japanese Government and the nation's nuclear power industry sent groups of experts to the United States at the time of the Three Mile Island nuclear power plant accident in 1979.

Information gathered by the Japanese Government so far is sketchy, the official said, adding the government will convene an emergency meeting of government officials shortly to deal with the crisis.

/9274

CSO: 5160/049

JAPAN

INTOURIST WARNS OF RADIATION FROM CHERNOBYL

OW130301 Tokyo KYODO in English 0211 GMT 13 May 86

[By Shiro Yoneyama]

[Text] Tokyo, May 13 KYODO -- Intourist, the official Soviet travel agency, has sent a telegram to Japanese travel agents warning that foreign tourists in the Soviet Union may be "absolutely endangered" from nuclear radiation. The message, signed by Intourist President Valentin F. Lebedev, explains the April 26 blaze at the Chernobyl nuclear power plant and subsequent developments in unusual detail.

"Special medical examination of tourists in the USSR has shown that none of them has been affected by radiation," Lebedev said in his statement. A copy of his telegram was made available to KYODO news service Tuesday.

"Foreign tourists may travel throughout the USSR visiting any tourist centre [without] being absolutely endangered." Japanese travel industry sources interpreted Intourist's conflicting message as suggesting that the aftereffects of the nuclear disaster have been far worse than the Soviets have claimed.

The telegram, apparently cleared by Soviet authorities said that two people died and "204 persons have been hospitalized with 100 persons among them subjected to radioactive contamination in certain degree; 18 persons are seriously sick." Japanese travel firms received the message from the state-run Soviet travel agency at the same time as a high-level delegation from the International Atomic Energy Agency was in the Soviet Union on a fact-gathering mission.

Four Japanese engineers returning from Kiev earlier this month were found to have been exposed to radioactivity leaked from the stricken nuclear power plant. Of 123 tourists from Japan who were in the Soviet Ukraine at the time of the Chernobyl accident, 118, including 12 Americans and six other foreign residents in Japan, underwent tests upon arrival here, a Foreign Ministry official said.

The official said 45 Japanese were found to have been exposed to radioactivity, with at least one of them suffering from 590 millirems of radiation -- the danger level is said to be 3,000 millirems. Some tourists were forced to give up contaminated belongings and clothes.

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CSO: 5160/062

JAPAN

NHI INTERVIEWS CPSU'S KVALENKO ON CHERNOBYL

OW151311 Tokyo NHK Television Network in Japanese 1206 GMT 15 May 86

[Interview with Ivan Kovalenko, deputy chief of the International Department of the CPSU Central Committee, who is currently visiting Japan at the JSP's invitation, by NHK reporter Iida -- recorded; time and place of interview not given; interview conducted in Russian, with Japanese translations provided in subtitles; the following text is from the Russian version]

[Text] [Iida] Ivan Ivanovich, Japan as well as some other Western countries have seriously criticized the Soviet Union for the long delay in informing those countries that were affected by the Chernobyl accident about what had happened there.

[Kovalenko] I understand. To say that we waited a long time to come out with a report is not true. True, there was a 2 to 3 day delay, but no more.

When the accident happened, the local authorities thought that the accident was of a local character and that they could cope with the accident through their own efforts. When it became clear that the accident was more serious and that more serious consequences were involved, they informed the central authorities -- the government -- about what had happened, and our government immediately publicized what had happened at the Chernobyl AES, announcing that a serious accident had happened. That was the first report. After that we informed the UN secretary general as well as the IAEA, the international agency monitoring the peaceful uses of nuclear energy.

[Iida] It seems to us that the approach toward issuing reports or the concept of issuing reports in the Soviet Union differs from the approach of Western countries. What is your view?

[Kovalenko] Indeed there is a difference. We only report what is true, and for this reason our reports are reliable ones. We stand by our reports. Westerners are pursuing sensationalism bordering on provocation and are publishing all kinds of cock-and-bull stories and thus confusing international public opinion. This is why I agree with you. We have a broad plan for the construction of AES's.

The energy resources are growing smaller and smaller in the world. The use of nuclear power for peaceful purposes is a long-term and necessary thing caused by the needs of further scientific-technical progress, development of the economy and national economies of various countries. I repeat, however, nuclear energy must be used only for peaceful purposes.

/9274

CSO: 5160/063

JAPAN

SUMMIT ISSUES STATEMENT ON NUCLEAR ACCIDENT

OW051003 Tokyo KYODO in English 0955 GMT 5 May 86

[Text] Tokyo, May 5, KYODO -- Following is the full text of a summit statement on nuclear accident:

1. We, the heads of state or government of seven major industrial nations and the representatives of the European Community, have discussed the implications of the accident at the Chernobyl nuclear power station. We express our deep sympathy for those affected. We remain ready to extend assistance, in particular medical and technical, as and when requested.
2. Nuclear power is and, properly managed, will continue to be an increasingly widely used source of energy. For each country the maintenance of safety and security is an international responsibility, and each country engaged in nuclear power generation bears full responsibility for the safety of the design, manufacture, operation and maintenance of its installations. Each of our countries meets exacting standards. Each country, furthermore, is responsible for prompt provision of detailed and complete information on nuclear emergencies and accidents, in particular those with potential transboundary consequences. Each of our countries accepts that responsibility, and we urge the government of the Soviet Union, which did not do so in the case of Chernobyl, to provide urgently such information, as our and other countries have requested.
3. We note with satisfaction the Soviet Union's willingness to undertake discussions this week with the director-general of the International Atomic Energy Agency (IAEA). We expect that these discussions will lead to the Soviet Union's participation in the desired post-accident analysis.
4. We welcome and encourage the work of the IAEA in seeking to improve international cooperation on the safety of nuclear installations, the handling of nuclear accidents and their consequences, and the provision of mutual emergency assistance. Moving forward from the relevant IAEA guidelines, we urge the early elaboration of an international convention committing the parties to report and exchange information in the event of nuclear emergencies or accidents. This should be done with the least possible delay.

/9274

CSO: 5160/055

JAPAN

RADIOACTIVE JET STREAM LEAVES JAPAN, HEADS NORTH

OW050823 Tokyo KYODO in English 0814 GMT 5 May 86

[Text] Tokyo, May 5 KYODO — The jet stream believed to have brought radioactivity leaked in the nuclear plant accident in the Soviet Ukraine has moved northward from Japan, the meteorological agency said Monday. If the radioactivity found in Japan's natural environment was brought by the jet stream, radioactivity levels should go down from now on. However, the radioactivity could also reach Japan via lower air currents, the agency said, adding they still have to keep watch.

The jet stream was blowing east over Hokkaido Saturday, after the Chernobyl nuclear plant meltdown last week. But it moved north of the Sea of Okhotsk Sunday morning. It is now passing over the Kamchatka peninsula to the Pacific Ocean, according to the Agency.

The jet stream was blowing in the Ukraine region towards Scandinavia at an altitude of 5,500 meters, according to reports as of 9 p.m. Sunday. It then spreads into two currents — a weaker current going eastward and another southward to the Black Sea before again turning northward. The two currents meet again east of the Urals to blow eastward at around 60 degrees north latitude, the agency said.

Winds were blowing north-northwest at a speed of 22 meters per second above Kiev.

/9274

CSO: 5160/053

JAPAN

JSP CHAIRMAN ENDS 'ANTINUCLEAR' OCEANIA TRIP

OW221311 Tokyo KYODO in English 1304 GMT 22 Apr 86

[Text] Wellington, 22 Apr (KYODO)--Masashi Ishibashi, chairman of the Japan Socialist Party (JSP), completed his "antinuclear, arms control" trip to Oceania Tuesday, with a renewed determination to promote his party's nuclear-free policy.

Ishibashi's trip to Australia and New Zealand drew to a close at a time of a continuing diplomatic row between the United States and New Zealand over the refusal by the labor government or Prime Minister David Lange to allow port calls by U.S. ships carrying nuclear weapons. Lange's anti-nuclear policy has threatened the very existence of the Australia-New Zealand-United States (ANZUS Treaty) of 1951, according to the U.S., but the New Zealand premier repeatedly denied that in a meeting with Ishibashi.

The leader of Japan's No 1 opposition party clearly supported Lange's stance and said his party plans to sell the idea to nuclear weapons-allergic Japanese voters. On the other hand, he also found in the course of his trip to Australia that Australian leaders consider the security arrangements between Washington and Canberra vital to the security of their country regardless of political orientations.

In the end, sources said, Ishibashi's Oceanian trip has broadened his party's international stance but he continues to pursue the present "antinuclear, non-alliance" policy irrespective of dissenting voices within his own party.

/9738
CSO: 5160/048

JAPAN

BRIEFS

PRC NUCLEAR SYMPOSIUM--Hiroshima, 22 Apr (KYODO)--A six-man Japanese group, including four atomic bomb victims of Hiroshima and Nagasaki will visit China for nine days starting Thursday to appeal for a nuclear-free Asia and Pacific. The group, headed by Yukio Yokohara, official of the Hiroshima chapter of the Japan Congress Against Atomic and Hydrogen Bombs (Gensuikin), will visit China at the invitation of a Chinese labor organization. The six are scheduled to attend a symposium entitled "labor unions and peace" in Beijing and visit three other cities. [Text] [Tokyo KYODO in English 0955 GMT 22 Apr 86 OW] /9738

CSO: 5160/047

PEOPLE'S REPUBLIC OF CHINA

PRC CANCELS AGREEMENT TO PURCHASE NUCLEAR REACTORS FROM FRG

Hamburg DER SPIEGEL in German 10 Mar 86 p 164

[Unsigned article: "Painful Blow"; first paragraph is a SPIEGEL observation]

[Text] Since the German reactor builders did not get a chance in China, it is completely unclear what is going to happen with regard to Beijing's nuclear plans.

The 48 red files in room 2657 of the Beijing "Minzu" Hotel only have documentary value since the past week: The billion-mark project of the FRG Kraftwerk Union (KWU), which is described there on thousands of pages in all technical details, has been canceled by China's economic planners because of a lack of capital and foreign exchange.

The thus far biggest German-Chinese nuclear project involved the turnkey construction of two nuclear power plants with 1000 megawatts each. The Chinese rejection is "a painful blow," according to Werner Henschel, KWU's Beijing representative. The Siemens subsidiary had already invested DM 10 million in the project.

Last summer, foreign ministers Wu Xueqian and Hans-Dietrich Genscher, watched by the satisfied smiles of Federal Chancellor Helmut Kohl and Premier Zhao Ziyang, had agreed in Bonn that the Germans were to deliver "Agreement on Cooperation in the Field of the Peaceful Use of Nuclear Energy." "Nuclear energy is a safe, clean, and progressive energy source," Vice President Li Peng raved at that time.

Three to four large and medium-sized nuclear power plants were to be built by 1990; by the turn of the century Beijing wanted to have ten nuclear power plants with a total capacity of 10,000 megawatts. By the year 2000, the estimates went, nuclear power would constitute about 4 percent of the total Chinese consumption of electricity.

Following the latest decision, not much will be left of the ambitious plans. For the time being, only two nuclear power plants are to be built.

The Qinshan nuclear reactor in Zhejiang Province is to go on stream with 300 megawatts in 1986. The power plant will supply especially Shanghai, the city of 10 million situated 126 km to the north. The Qinshan reactor, constructed according to the obsolete technology of Westinghouse, the U.S. power plant builder, is praised as the first domestic development. Also being continued is the construction of the Daya Bay nuclear power plant in the southern province of Guangdong, which, with a capacity of 1800 megawatts, will sell the power for good foreign exchange to nearby Hong Kong.

Here, too, KWU had submitted its bid--without success. The Chinese negotiated with the British and the French; the contract is not yet set. Early March, the rumor goes, the final award is to go to General Electric and Framatome.

The German power plant builders had negotiated with all the more determination in connection with the project that has now been stopped. At the end of 1985 delegations numbering up to 40 persons had discussed all details for the construction of the first two pressurized-water reactors with the Chinese in Beijing and in Wuxi near the planned location. As recently as early March, KWU chairman of the Board Hans Frewer negotiated in Beijing. "The technology was 100 percent clear," KWU representative Herschel said, "we had hopes."

There wasn't enough money, but that also did not appear to be an obstacle. The partners had built a golden bridge for the foreign-exchange-short Chinese from concessions and offers of barter transactions. The bundle, put together in such a complex way, provided that half of the 6 billion DM installation would be settled with delivery of metals. Moreover, the Germans wanted to purchase grain, petroleum and bituminous coal as well as 6,000 tons of natural uranium from the Chinese. Plans also called for the politically controversial final storage of 150 tons of spent fuel elements in China.

The fact that this deal did not materialize is connected with the worry of the Chinese about too many debts and political dependence. Beijing wants to consolidate the reform policy of "opening to the outside and revival within," which led to illegal imports of luxury goods, to economic criminality, corruption, and overheated market conditions, by a conservative budget policy.

Thus KWU chairman Frewer returned from Beijing merely with a noncommittal declaration of intention: Both sides want to continue the cooperation in the field of nuclear energy.

The Chinese did not even want to say whether or not the other planned nuclear reactors would be built at all. The question was still being considered, they said.

All interested parties for possible new large-scale nuclear projects are being put off to the next 5-year plan: They could perhaps get an opportunity then. But the plan does not start until the year 1991.

CANADA

U.S. ASKED TO CONSIDER NUCLEAR SITES AWAY FROM BORDER

Toronto THE GLOBE AND MAIL in English 5 Apr 86 p A3

[Article by Jennifer Lewington]

[Text] With a nervous eye on proposed U.S. nuclear waste dumps near the border, Canadian federal and provincial officials have urged the United States to consider other locations.

At a meeting yesterday, Canada also asked the United States to bring in the International Joint Commission, a bilateral agency for transboundary water issues, to referee some aspects of the nuclear-dump controversy.

The meeting was the first bilateral session since January, when the U.S. Department of Energy named 20 potential sites for underground disposal of highly radioactive waste. The list will be narrowed to one in the eastern United States by 2000.

Of the 20 sites, Canada is especially concerned about eight located in drainage basins that ultimately feed into Canada. These are in four border states: Minnesota, Wisconsin, New Hampshire and Maine.

"We suggested it seemed of doubtful merit to locate a nuclear waste repository in any areas of ground or surface water migration," said Stan Gooch, an External Affairs Department official who attended the meeting.

That description fits as many as five sites in the Red River basin, two in the Great Lakes basin and one in the St. Croix River area.

He said Canada suggested that the United States look at underground dry salt

caverns as an alternative to sites subject to flooding, such as those near the Red River.

"We are opposed to any development which would pose a transboundary threat to Canadian health and property," Mr. Gooch said after the meeting. "The onus is on them (the United States) to establish there would be no transboundary effect."

By involving the IJC, Canada hopes to play a more direct role in the U.S. deliberations on a dump site.

At present, the United States listens to Canadian concerns at irregular bilateral consultations. But with the IJC, there is a bilateral vehicle for adjudicating transboundary water problems.

Mr. Gooch said both governments could use the IJC to examine and report on any transboundary implications of the proposed sites. Under the 1909 Canada-U.S. Boundary Waters Treaty, both countries agreed not to pollute waters flowing across the border or damage each other's health or property.

Canadian and U.S. officials agreed on a joint press line, which means Washington will consider the Canadian request about the IJC.

Manitoba, Ontario and New Brunswick, which all border on states with proposed sites, participated in part of yesterday's meeting.

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CSO: 5120/35

CANADA

CHERNOBYL INCIDENT PROVOKES ACTION IN ONTARIO

Peace, Environmental Groups

Toronto THE GLOBE AND MAIL in English 7 May 86 p A17

[Article by Susan Delacourt]

[Text] Canada cannot afford to be smug in the wake of last week's Soviet nuclear accident, two nuclear researchers and the energy critic for Ontario's New Democratic Party said yesterday.

In a statement endorsed by 25 Ontario peace and environment groups, the three noted that the odds against a meltdown in a Canadian-made reactor are exactly the same as those offered by the Soviets three months before the disaster at the Chernobyl nuclear reactor complex.

Further, they said, Canada is not much better than the Soviet Union in providing details about the inner workings or potential hazards of its nuclear operations.

Accompanying the statement was a call for improved communication about the nuclear industry and public discussion about the threat of a Chernobyl-type accident in Canada.

Brian Charlton, the Ontario NDP energy critic, urged a provincial referendum on the future of nuclear power and an immediate hold on plans for the Darlington nuclear generating station.

Mr. Charlton and the two researchers at yesterday's news conference said Canadians can no longer be left out of decision making on nuclear operations. Nor can governments continue to provide only sketchy details on the potential dangers, they said.

"It just isn't good enough to state glibly — like the nuclear industry

representatives have — that our reactors are different and it just couldn't happen here," said David Martin, a researcher with the Toronto Nuclear Awareness group.

"Any reactor system can melt down."

Dr. Rosalie Bertell, director of the International Institute of Concern for Public Health and a former consultant to the U.S. Nuclear Regulatory Commission, said she is wary of Ontario Hydro's commitment to protecting people from radioactive threats.

"One of the underlying problems is the difference between the definition of safety by engineers and the definition of safety by the general public."

The public may be told that radiation levels are safe, she said, but that definition is provided by engineers, who regard "legally permissible" and "safe" as synonymous.

In 1978, the Ontario Royal Commission on Electric Power Planning stated that for each reactor in Ontario, there is a one-in-10,000 chance of a meltdown each year.

Coincidentally, Mr. Martin noted, the same odds were touted three months ago by the Ukrainian minister of power and electricity as proof of Chernobyl's invulnerability.

Yesterday's statement advocated the phasing out of all nuclear operations and renewed examination of alternate energy sources.

"The whole world lives downwind from Chernobyl," it said.

Review of Nuclear Installations

Toronto THE GLOBE AND MAIL in English 7 May 86 p B9

[Article by Dennis Slocum]

[Text]

The Ontario Government is reviewing the province's nuclear power installations in the wake of the recent disaster at the Chernobyl nuclear power plant in the Soviet Union.

Provincial Energy Minister Vincent Kerrio told the Canadian National Energy Forum in Toronto that he has asked for a study on all phases of the nuclear program, including safety and emergency planning.

Nuclear plants currently provide about one-third of the province's power, with the remainder split evenly between hydroelectricity and coal.

Mr. Kerrio said nuclear power's role could possibly decline. "It depends on the future. Guaranteed supply is a must."

Ontario's industry tends to be capital and energy intensive and more energy capacity will be needed.

The plan is to stress energy efficiency and work on developing increased sources of power supply, the meeting was told. The Government wants "to take advantage of" generating stations that can use more than one fuel, local hydro sources and energy from waste.

An expected fundamental shift before the end of the century to information and other service-oriented industries will help restrain energy consumption, Mr. Kerrio said. Also, the Government will encourage investment in energy-efficient plants and equipment.

A priority is removing barriers to energy efficiency, "whatever form those barriers take," he said.

Mr. Kerrio charged that federal

regulators are dragging their feet on natural gas and that prices may never drop as much as they should when the industry is deregulated in November.

"We believe the system is still far too rigid and that pipeline and distribution companies are less than enthusiastic about the new environment," the meeting was told.

After noting that an inflexible system removes true competition, Mr. Kerrio said Ontario wants companies to have "non-discriminatory" access to the pipeline system of Transcanada Pipelines Ltd. of Calgary.

"We have shown our willingness to co-operate with the federal Government and the producing provinces. . . . In return, we expect that Ontario will be a full participant in any future policy discussions."

The Chernobyl system would not be allowed in Canada, Tom Campbell, chairman of Ontario Hydro, told the forum. However, he admitted that the disaster "will shake a lot of people's confidence in the system."

Ontario's plants are safe, he said, noting the massive amounts of cement used as protection. "The Darlington plant used enough cement to build 12 CN Towers," he said. "It adds incredibly to cost, but it is a safety factor."

Nuclear plants, while more expensive to build than coal-fired generators, are less expensive over the life of the plant because fuel costs are lower, he said.

Options available for the future also include long-term purchases of power from Manitoba or Quebec, he added.

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CSO: 5120/36

CANADA

ELDORADO NUCLEAR REPORTS DEBT, SEEKS DUMPSITE

1985 Loss

Ottawa THE CITIZEN in English 22 Apr 86 p B4

[Text]

A debt-laden Eldorado Nuclear, the government's uranium mining and processing company, slipped into the red last year, losing about \$57 million, says the company's annual report released Monday.

Eldorado is one of the government's Crown corporations that is up for sale.

Management blamed the \$57.2-million loss on its debt load, royalty payments and low uranium prices. The balance sheet showed a profit of \$4.4 million in 1984.

The loss, the second in 12 years, came even though revenue increased six per cent to \$219.8 million.

Eldorado has a long-term debt of \$513.5 million, an amount built up by an expansion program that has nearly trebled its assets since 1980. Interest expenses of \$73

million last year ate up one-third of its revenue.

The report noted that Eldorado is one of the most highly leveraged mining companies in Canada, with almost three times as much debt on its balance sheet as shareholder equity.

About \$80 million of its long-term debt is due this year, but the company has decided to borrow

the money to make the loan payment, finance vice-president Tom Gorman said.

The company had hoped when it decided to finance its expansion plans that the uranium market would be stronger than it is.

In hindsight, it would have been better to borrow the funds over a longer term, Gorman said.

Eldorado was forced to take on debt because the government refused to contribute any further equity.

The report said that both the company and the government recognized that weak markets could result in losses until the new operations start to provide enough cash to cover financing expenses.

Uranium production was off 24 per cent, primarily because of lower production from its Rabbit Lake mine in northern Saskatchewan.

While uranium markets have been weak in recent years, the report said things are looking up as more nuclear reactors come on stream.

The company's order book was 50 per cent thicker at the end of 1985 than it had been the previous year.

Search for Permanent Dumpsite

Ottawa THE WEEKEND CITIZEN in English 26 Apr 86 p A3

[Text] PORT HOPE (CP) — Eldorado Resources Ltd. is seeking a permanent dumpsite for the nearly one million tonnes of nuclear waste deposited in and around this community, the federal government said Friday.

Bob Layton, minister of state for mines, said the site will hold the low-level radioactive waste produced at the Crown corporation's uranium refinery in Port Hope.

Should the federal government succeed in its attempt to sell Eldorado, he said, the gov-

ernment would remain responsible for cleanup.

He said any site selected would have to be approved by an environmental assessment review panel, plus the federal and Ontario governments.

About 200,000 tonnes of waste is deposited in six ravines in Port Hope's. Another 600,000 tonnes is in a dump site near Newcastle, about 20 kilometres away, and about 200,000 tonnes in a dumpsite in nearby Hope township.

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CSO: 5120/36

CANADA

TV SCAN FINDS SPLIT IN BRUCE REACTOR PRESSURE TUBE

Toronto THE GLOBE AND MAIL in English 12 Apr 86 p A3

[Article by Thomas Claridge]

[Text] A television scan inside a reactor pressure tube, which failed suddenly at Ontario Hydro's Bruce Nuclear Power Development last month, has disclosed a split at least three metres long, a Hydro spokesman said yesterday.

Michael Williams said the scan by a \$50,000 miniature TV camera system also showed that at least one of 6½ "pencils" missing from uranium fuel bundles removed from the tube is lodged in the huge fissure.

The probe on Thursday confirmed that the crack was along the top of the tube, and that the rupture on March 28 may have started in an area where three other pressure tubes in the same Unit 2 reactor sprang small leaks in 1982 and 1983, he said.

Two weeks after the rupture, officials are still uncertain as to either its cause or long-term significance. But the most popular theory is that

the incident is more like the earlier small leaks than the only previous pressure-tube rupture at Pickering in 1983.

The Pickering rupture was on the bottom, rather than the top, of the tube and was ultimately attributed to the tendency of metal used in the pressure tube to absorb high levels of hydrogen at points where it had come in contact with an outer "calandria tube."

Mr. Williams said tests carried out on the Unit 2 reactor last year included detailed examination of 20 pressure tubes and removal of one known to have been in contact with its calandria tube for several years. He said examination of the tube at the Chalk River Nuclear Laboratories confirmed that hydrogen levels in the tube walls were low.

The three previous leaks within the Unit 2 reactor all developed at points where the tubes had been roll-pressed into the reactor's end fittings.

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CANADA

BRIEFS

U.S. SUBMARINE VISIT PROTEST--A local peace group is upset by the presence of an American submarine in port, saying the boat is carrying nuclear warheads. The USS Von Steuben docked Tuesday at Canadian Forces Base Shearwater with a crew of 168, triggering protests from the disarmament group Project Ploughshares. Group spokesman Valerie Osborne said the 123-metre vessel carries 16 multiple-warhead nuclear missiles and is in violation of federal government policy not to allow nuclear weapons on Canadian soil. [Text] [Ottawa THE CITIZEN in English 23 Apr 86 p E8] /13104

SASKATCHEWAN 1984 URANIUM PROFITS--The Saskatchewan Mining Development Corp. reported an \$18-million profit in 1985, up 18 per cent from 1984 due to increased world demand for uranium. The annual report of the provincial Crown corporation, tabled in the legislature Wednesday, showed the mining development company made an extra \$3 million last year. [Text] [Ottawa THE CITIZEN in English 18 Apr 86 p A22] /13104

CSO: 5120/35

BULGARIA

IMPROVEMENT OF NUCLEAR REACTOR EFFICIENCY URGED

Sofia. RABOTNICHESKO DELO in Bulgarian 18 Apr 86 p 3

[Article by Ivan Pandev, chairman of Council of Ministers' Committee for Use of Atomic Energy for Peaceful Purposes: "Atomic Energy a Powerful Means of Development"]

[Text] One of the principal features of the second half of our century is the rapid development of nuclear science and technology and their wide-scale penetration of industry, agriculture and medicine. In our country the first 440-MW (e) reactor was put into operation in 1974. At the moment four blocks with a total installed power of 1760 MW (e) are in operation.

In 1985 when our power industry was experiencing certain difficulties and production tempo and domestic power supply were disrupted, the Kozloduy Atomic Power Plant was operating trouble-free at full capacity and producing more than 30 percent of the electric power the country obtained. The Bulgarian People's Republic ranks as one of the first in the world in respect of this criterion. We can easily imagine what a severe crisis our country would have suffered if it had not been bearing towards wide-scale use of this new type of power production technology.

What has been achieved in this area is, of course, not the limit. Not for nothing does the Report of the BCP Central Committee to the 13th Congress emphasize that "the importance of the atomic power industry is continuously growing. . ." In fulfillment of the approved program two reactors, each with a capacity of 1000 MW (e), are to come into operation at the Kozloduy Atomic Power Plant, while the construction of six reactors, each of 1000 MW (e), is being accelerated at the new site near Belene. By the year 2000 our country will have a nuclear capacity of 9760 MW (e), which will produce 65-70 percent of the entire generated electric power. The equivalent of this electric power is 15 million tons of petroleum or 90-100 million tons of our lignite a year.

At the price of what, it is worth reflecting, would we procure this quantity of petroleum? And from where would we obtain these additional quantities of lignite? But even if we had it in the ground, how many new railroad lines and other facilities would have to be constructed and how much rolling stock would have to be used to transport it? And how would the combustion thereof affect the environment? As in due course our country moves towards the use of atomic

energy for the production of electricity and, in the future, will also use atomic plants to supply heat and steam, it is solving problems of a global character not only in the area of power engineering, but also in the area of the ecology.

Forecasts of our country's power provision up to the first few decades after the year 2000 show that there is no alternative to a nuclear power supply. The other socialist countries, including the USSR (in the European part of that country), are also in a similar position. This makes it imperative for the CEMA-member countries to concentrate their energies and resources on reconstructing the power industry, increasing its efficiency, curtailing substantially the use of scarce organic fuel, and improving the heat supply of cities and environmental protection.

That is why the Comprehensive Program for the Scientific and Technical Progress of CEMA-Member Countries up to the Year 2000, adopted at CEMA's 41st extraordinary session, envisages the application of a number of new technologies and developments, which have as their aim to improve the nuclear capacities in operation and the new ones under construction.

To achieve these goals, we must, with the joint efforts of the fraternal countries and, above all, the USSR, improve the quality of the VVER [water-moderated water-cooled reactor]-440 and the VVER-1000 and increase their technical and economic efficiency. Highly reliable new systems, using computers [of Western (kompyuteri) and CEMA (elektronno-izchislitelna mashina) make] for the automation of technological processes, must be introduced. In this way monitoring-and-measuring processes and control and safety systems will be improved.

A rapid development of robotics has recently been registered. The atomic industry has an interest in the possibilities of using robots under elevated-radiation conditions where it is difficult, and in many cases forbidden, for humans to work. Special robots and manipulators are being created to perform monitoring, repair and destructor operations.

The use of natural uranium must be improved. The contribution of uranium to the world fuel-energy balance can be increased 50- to 70-fold by "burning" uranium-plutonium fuel in fast-neutron reactors. A great problem in nuclear power engineering is the efficient processing, conveyance and storage of radioactive wastes.

The technological level of our industry makes it possible to step up its participation in the building and operation of atomic power plants. With the strenuous program for the construction of nuclear capacities in the period up to the year 2000 and thereafter, clearly the state must allot considerable funds for the import of equipment. Without a decisive increase of the participation of our machine-building and electronic industries in the production thereof for our needs and for shipments under subcontracting arrangements within the CEMA framework, the balancing of these resources is difficult to accomplish and in practice may delay the targeted rate of construction of our country's nuclear power industry with all adverse consequences for meeting the country's energy balance.

There is no doubt that these possibilities and problems engage the attention of the party, state, economic and public organizations concerned and that they will have an important place in their activity to implement the decisions of the 13th Party Congress.

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CSO: 5100/3039

BULGARIA

PROGRESS REPORT ON INSTALLATION OF EQUIPMENT AT 1000-MW UNIT

Sofia TRUD in Bulgarian 14 Apr 86 p 1

[Article by Valeri Vedov, TRUD correspondent: "Installers Have the Floor--Construction Men Have Wound up Work on Fifth Power Block of Kozloduy SAEK [not further identified; possibly Stopanski Atomno-Energien Kombinat, 'Economic Atomic Energy Combine']--Checking and Pre-Startup Operations Beginning on Principal Subprojects--Newspaper TRUD Watching Construction of Projects of Especially Great Significance for Power Industry"]

[Text] "This is our Everest!" exclaimed Engr Todor Topalski, director of the Industrial Construction Enterprise, when after traversing hundreds of steps we finally set foot on the dome of the reactor compartment. It was not so much the height that lured him into this comparison, but rather the enormous labor, will and energy invested here by the construction men and installers of the Fifth Power Block of Kozloduy SAEK.

The concreted dome is beyond a doubt the best observation site, from which the great building can be encompassed in a glance. Under way here are the final construction jobs on the reactor compartment--the so-called stressing of the dome, which will ensure its stability.

This operation is carried out with long sheaves of steel wire, and the specialists preferred the product of the Steel Wire and Cable Economic Enterprise in Roman to imports due to their better quality criteria. This indicates good rehabilitation of the Roman workforce, which until recently was often reproached for its low-quality output.

Installers and power engineers already have the floor in the reactor compartment and its more than 800 rooms. In the central room where at the end of the year the 1000-MW reactor will produce the first electric power for the country, the Yuriy Gagarin brigade of two-time Hero of Socialist Labor Gospodin Yordanov is working. In honor of the 13th BCP Congress they have completed ahead of schedule the final assembly of the inner-vessel layout of the reactor, sealing the basic pit. True, in the weeks ahead they face extremely complex and critical operations, but the members of the Gagarin brigade are gratified that they have wound up one very important stage of their job. With the 1000-MW unit, as compared with the previous power blocks, many things are new and even these expert and highly qualified installers have something to learn. . .

Nor can we pass over the "brain" of the Fifth Power Block--the command room, which with surprising rapidity becomes a flank observer. Most of the complex instrumentation through which humans will control still more complex processes for the production of atomic energy is already in place. Employed in this room are the representatives of Energomontazh [Economic Enterprise for Electric Wiring Installations] at Kozloduy and the operations specialists--the future masters who from here will observe and monitor the pulse of the 1000-MW unit.

These days great attention is paid to one of the principal subprojects of the power block--the machine room. The bulk of the work here was taken on by Energomontazh of Varna. The workers and specialists from this enterprise achieved their pledged result in many days of strenuous work. A test spin has been made of the turbogenerator, which, according to the director of the Varna installers, Ivan Lichkov, means that the specialists can already prepare the steam generator for full revolution through the use of steam from external sources.

The installers have had to overcome many difficulties, but now they are satisfied that the work has fallen into its normal rhythm. The turbine rotor was delivered late for a number of reasons, and in just 1 month Ivan Zhabov's brigade succeeded in installing and centering it. In the unanimous opinion of the specialists, never before had such a rotor been installed in so little time. Also satisfied with what had been accomplished was Hero of Socialist Labor Nikola Naydenov, whom we found (together with Iliya Uzunov) making final checks of the rotor's axial bearing. Fulfilling what they had pledged despite objective difficulties, they believe, is a matter of honor of an installer. And these words on the lips of Nikola Naydenov do not have the ring of gushiness, but the conviction of a master workman who has behind him all the plants of the Devnya Lowland and so many electric power plants in the country that he himself is hard put to it to count them up.

Concentrated in the machine room now are 26 installation brigades from Varna, Kozloduy and Pleven. They have installed nearly 2000 tons of tubing, the wondrous tangle of which leaves one amazed. Only somebody through whose hands thousands of meters of tubing has passed can explain and unriddle their route. In addition to insulation of the feed pipes, tests of the main steam pipes have also started. The brigades of Prokopi Yonchev and Angel Donov are performing one of the most crucial installation jobs--the so-called filling of the system with oil. This activity requires very clean work and high quality. Assessing the work so far of the Varna installers, Director Ivan Lichkov is sure that they will meet these high criteria. The period of pre-startup tests in the machine room will come to an end in the month of May. Or, in the expression of one installer, in spite of the strain the work is already going easier [word illegible] the end is in sight.

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CSO: 5100/3039

GERMAN DEMOCRATIC REPUBLIC

NEW LEGAL DIRECTIVE ISSUED GOVERNING NUCLEAR WASTE STORAGE

East Berlin GESETZBLATT in German Part I No 13, 15 Apr 86 pp 182-3

[Directive by Chief Public Health Officer Prof Dr med. habil., Dr rer. nat. h. c. Sitzlack, state secretary and president of the GDR State Office for Nuclear Safety and Radiation Protection, issued in Berlin on 25 February 1986]

[Text]

Directive
on the Central Collection and Terminal Storage
of Radioactive Wastes

of 25 February 1986

In order to implement Article 17 of the ordinance of 11 October 1984 on ensuring nuclear safety and radiation protection (GESETZBLATT Part I, No 30, p 341), the following is decreed for the safe and economically efficient collection and terminal storage of radioactive wastes, in concord with the heads of the appropriate central state organs and in agreement with the national executive committee of the Free German Labor Union Federation:

Article 1

Purview

(1) This directive regulates the central collection and terminal storage of radioactive wastes. (Footnote 1) (Radioactive waste: Radioactive material whose further use is not possible for scientific, technical, and economic reasons and which is disposed of under conditions that isolate it from the environment; furthermore, the activity and activity concentration of such waste exceed the stipulated release limits for radioactive waste.) The classification of radioactive wastes into types of waste and radiological groups is regulated according to the directive of 4 September 1981 on the General Performance Terms for the Central Collection and Terminal Storage of Radioactive Wastes (Special Edition No 1073 of the GESETZBLATT).

(2) This directive is in force for

- State organs,
- Combines, industrial-management organs, enterprises, cooperatives, institutions, and corporative organizations (termed enterprises in what follows),

that use nuclear energy.

(3) For radioactive wastes that contain nuclear material, in addition the legal regulations are in force concerning the control of nuclear material and the physical protection of nuclear material and nuclear facilities.

(4) This directive does not apply to the release of radioactive discharges into the environment, inclusive of the storage of materials and waste substances containing natural radionuclides in dump heaps and settling facilities.

(5) This directive does not apply to other wastes that are generated in the use of nuclear energy but whose activity or activity concentration is below the release limits for radioactive wastes. For such wastes, the legal regulations of the environmental control law on the safe disposal of non-usable waste products are in effect.

Article 2

Basic Principles

(1) Radioactive wastes must be collected and put in terminal storage in a central location whenever a falling below the release limits is not achieved by intermediate storage after a period of 1 year, or when other stipulations are made in the authorization permit.

(2) For radioactive wastes, the release limits are applicable as stipulated in Article 28, Paragraphs 1 and 5 of the implementing regulation of 11 October 1984 on the ordinance concerning the ensuring of nuclear safety and radiation protection (GESETZBLATT, Part I, No 30, p 348). The provision in force for the use of the release limit on activity is that for each application case, wastes with an activity per week up to the release limit can be disposed of without authorization. In lieu of the release limit on activity concentration of 100 Bq/gram, it is permissible to use

- for solid wastes with radionuclides that emit photons having an energy > 20 keV, an equivalent dose rate of 10 μ Sv/hour, measured at a distance of 0.1 meter from the unshielded surface;

- for solid wastes with contaminated surfaces, a surface contamination figure for alpha-emitters of 50 kBq/m², and for beta/gamma emitters a figure of 500 kBq/m².

If these criteria apply concurrently, then the more restrictive value is in effect.

(3) The object of the central collection is the delivery of radioactive wastes by the enterprises in which the wastes are generated, in conjunction with the acceptance of these wastes by the enterprise that is entrusted with the central collection and terminal storage. (Footnote 2) ("Bruno Leuschner"³ Nuclear Power Plants Combine VE of Greifswald, operational section of terminal storage for radioactive wastes, 3241 Morsleben)

(4) The object of the central terminal storage is the transporting of the radioactive wastes to a site for their permanent retention, under conditions that are suited to an isolating of the radionuclides from the environment until their activity falls below the stipulated release limits.

(5) In the planning, preparation, and execution of capital projects and processes for the use of nuclear energy, the requisite measures for the disposal of radioactive wastes, consisting of their gathering, treatment, intermediate storage, and delivery to the central collection, must be taken into account by the enterprises.

(6) Radioactive materials may be delivered to the central collection and terminal storage as radioactive wastes only if, after a consideration of the economic cost involved, these materials as a whole or components of them cannot be put to any further in-house and inter-enterprise use or second-time use as secondary raw materials in accordance with the legal regulations applicable to this.

(7) The accumulation of radioactive wastes must be kept as small as possible. Radioactive wastes that are subject to central collection and terminal storage are to be gathered together separately from other wastes, are to be converted into a form acceptable for central collection, and are to be put into intermediate storage within the radiation-protection area until delivery to the central collection enterprise. In connection with this intermediate storage, the retrievability of the radioactive wastes must be ensured.

(8) A diluting of radioactive wastes for the purpose of reducing their activity below the release limits for radioactive wastes is not permitted.

(9) With respect to the gathering, treatment, intermediate storage, and central collection and terminal storage of radioactive waste, control and security measures must be implemented so as to prevent unauthorized access.

Article 3

Responsibility

(1) Those enterprises in which radioactive wastes are generated are responsible for the gathering, treatment, intermediate storage, and delivery of radioactive wastes to the central collection site.

(2) Organs of the state within whose sectors nuclear energy is used directly bear the same responsibility as enterprises in accordance with Paragraph 1.

(3) The enterprise that carries out the terminal storage of radioactive wastes is responsible for the acceptance of radioactive wastes for such terminal storage.

Article 4

Operational Control and Documentation

(1) The enterprises in which radioactive wastes are generated must ensure operational control over the accumulation and retention of radioactive wastes. To that end, a balance sheet is to be drawn up concerning the quantity (with solid and liquid wastes—volume; with sealed radiation sources—number of pieces) and the activity of radioactive wastes that have been generated in the report period, conveyed to central collection and terminal storage, disposed of through other methods, and put into intermediate storage at the enterprise. For the wastes conveyed to the central collection and terminal storage site, in addition to the overall activity also the activity of the separate radionuclides must be given. Other stipulations may be made in the authorization permit.

(2) The enterprise that carries out the central collection and terminal storage of radioactive wastes must ensure operational control over the accepted and terminally stored wastes. It must provide the documentation concerning the amount, overall activity, activity of the separate radionuclides, and origin of the radioactive wastes that have been collected and put in final storage.

Article 5

Authorization

(1) The disposal of radioactive wastes is regulated in the authorization procedure for the relevant use of nuclear energy. With the application for authorization, it must be demonstrated that all radioactive wastes generated can be disposed of in accordance with the legal regulations.

(2) With the application for a permit, the following information and certifications on radioactive wastes must be presented:

1. for the approval of the site and the goals established

the basic plan for waste disposal, with

- a) preliminary data on the accumulation of radioactive wastes,
- b) a proposal for the central collection and terminal storage of the radioactive wastes generated;

2. for the approval of the construction and the project

the documentation on waste disposal with

- a) information on the organization of the enterprise's waste management,
- b) description of the properties of the radioactive wastes (types of waste, radiological groups, physical condition and chemical composition) and information on the waste accumulation (amount, overall activity, activity of the separate radionuclides),
- c) description of the arrangements, equipment, and procedures for gathering, treatment, and intermediate storage, including retrievability, and of the delivery of radioactive wastes to the central collection site,
- d) information on the operational control and security measures and on the documentation concerning the radioactive wastes,
- e) information on the secondary raw materials that are contained in the radioactive materials destined for waste disposal, and on results of studies concerning their in-house or inter-enterprise second-time use,
- f) declaration by the enterprise responsible for the central collection and terminal storage that the radioactive wastes destined for central collection can be collected and put in terminal storage in accordance with the legal regulations,
- g) delineation of the tasks that still must be resolved before starting the delivery of radioactive wastes;

3. for the approval of initial startup

the proof of contractual arrangements with the enterprise responsible for the central collection and terminal storage;

4. for the approval of decommissioning

information on the removal of radioactive wastes.

(3) Before changes are made that have an effect on the accumulation and properties of radioactive wastes, a modification of the permit must be applied for by the enterprises.

(4) Concerning the types of authorization of recording and registration, the stipulations in the design qualification approval are in effect for the disposal of radioactive wastes.

Article 6

Performance Terms

(1) Radioactive wastes must be registered at the central collection site with the enterprise responsible for this collection. The requirements in terms of the form and properties of the radioactive wastes as well as the delivery and acceptance conditions are governed by the Directive on the General Performance Terms for the Central Collection and Terminal Storage of Radioactive Wastes of 4 September 1981.

(2) The central collection and terminal storage of radioactive wastes operates on a cost-payment basis. The costs are to be borne by the enterprises in which these wastes are generated.

Article 7

Exemption Arrangements

(1) If there are compelling reasons, in exceptional cases departures from the stipulations of Article 2 and Articles 4 to 6 of this directive can be permitted by way of fixed-period exemption arrangements.

(2) Exemption arrangements in accordance with Paragraph 1 are made by the president of the State Office for Nuclear Safety and Radiation Protection upon application by the heads of the enterprises.

(3) Whenever these exemption arrangements affect the fields of duties of other central state organs, such arrangements are to be made in concert with the heads of these appropriate central state organs.

(4) The application for exemption arrangements must be in written form and must contain:

- a) The justification for the departure from the stipulations of this directive;
- b) The scope and the period of effectiveness of the exemption arrangements;
- c) Measures that ensure the central collection and terminal storage of radioactive wastes under the divergent conditions, and
- d) Measures for establishing the state of affairs called for in this directive and the target dates for realizing this.

(5) Exemption arrangements must be in written form and can be revoked at any time.

Article 8

Final Provisions

- (1) This directive goes into force on 1 July 1986.
- (2) At the same time, the directive of 11 May 1981 on the central collection and terminal storage of radioactive wastes (GESETZBLATT, Part I, No 16, p 224) becomes invalid.

Berlin, 25 February 1986

The President

of the State Office for Nuclear Safety and Radiation Protection

of the German Democratic Republic

Chief Public Health Officer Prof Dr med. habil., Dr rer. nat. h. c.

Sitzlack, state secretary

12114

CSO: 5100/3037

GERMAN DEMOCRATIC REPUBLIC

BRIEFS

NUCLEAR COOPERATION PROTOCOL SIGNED--Copenhagen, 1 May (ADN)--At the invitation of the Danish minister of the environment, Christian Christensen, a GDR delegation led by Secretary of State Professor Sitzlack, president of the State Office for Nuclear Safety and Radiation Protection, continued talks this week in Copenhagen on questions concerning the effectiveness of nuclear environmental protection and thus protecting the population in the peaceful application of nuclear energy. The two sides noted that cooperation on the basis of an agreement reached in 1980 has proven useful and agreed that they would continue this cooperation. Proposals to this end were discussed and a joint protocol was signed. [Text] [East Berlin ADN International Service in German 1423 GMT 1 May 86 LD] /9274

CSO: 5100/3038

ARGENTINA

CONSTANTINI ANNOUNCES REACTIVATION OF NUCLEAR PROJECTS

PY140137 Buenos Aires TELAM in Spanish 1357 GMT 13 May 86

[Text] Cordoba, 13 May (TELAM)--National Commission for Atomic Energy (CNEA) President Alberto Constantini has said that the 1986 budget will permit the reactivation of all CNEA projects, adding that in late 1987 or early 1988 the heavy water plant in Arroyito, Neuquen Province, will be completed.

While speaking to the press, Constantini, who had attended the Cordoba lectures devoted to atomic energy, expressed his confidence that the work on the third nuclear power plant, Atucha II, will progress steadily during 1986 and 1987.

Constantini stated that the 1986 CNEA budget is in the order of \$720 million, and that in 1987 the budget could total \$900 million in order to continue the Atucha II project. He recalled that the contracts on the two most important projects (Atucha and the heavy water plant), which were virtually paralyzed, have been renegotiated and a new timetable drawn up.

Constantini also ruled out delays in the Radioisotopes Center project which will be erected in Embalse, Cordoba Province, stating that we are implementing the basic engineering work and the planning state has been completed.

Concerning security at the nuclear plants, Constantini emphasized that we have arrived at the conclusion that the Chernobyl (Soviet Union) accident could never have happened here because, among other reasons, we have three safety barriers which they (the Russians) lack, namely the pressure vessel, which contains the fuel, a 4-cm thick steel cladding, and finally a prestressed concrete container. The Russian cost projection for a power plant is \$200 per KWH and we have built a power plant at a cost of \$2,500 per KWH.

/9604

CSO: 5100/2070

ARGENTINA

BRIEFS

FAULTY VALVE AT NUCLEAR PLANT--Cordoba, (NA-DYN)--There was an ammoniac gas leak in the local National Atomic Energy Commission (CNEA) plant when a fault developed in a safety valve, thus raising the spectre of a Chernobyl-style disaster. However CNEA said there was no danger. [Text] [Buenos Aires BUENOS AIRES HERALD in English 19 May 86 p 5 PY] /7358

CONSTANTINI DENIES SHARE TRANSFER--Buenos Aires, 28 Apr (NA)--Alberto Constantini, chairman of the National Atomic Energy Commission [CNEA], today denied that the government is considering transferring some of the shares it has at the Argentine Nuclear Enterprise for Electrical Power Plants [ENACE] to the FRG Kraftwerk Union [KWU]. In remarks to NA, Constantini stated: "I have never read anything as fantastic as this report since the books by Jules Verne," referring to a communique released by the Metropolitan Justicialist Party. In this manner, Constantini denied a report released by the Energy Commission of the Metropolitan Justicialist Party, which states that if this transfer to the KWU is firmed up, "it will be formally responsible for the handling of the installation of the Atucha II nuclear plant and of future plants." Constantini stated that "that report is absolutely false" and added that "the nuclear program will not be nationalized." He explained that the CNEA "is using part of an original credit of 16 billion marks, equivalent to about \$60 million, for the conclusion of Atucha II, which is scheduled for 1989." In conclusion, Constantini lamented that "the experts of the Justicialist Metropolitan party are so ill-informed." He added: "My office is open to report to any citizen on any activities of the CNEA." [Text] [Buenos Aires NOTICIAS ARGENTINAS in Spanish 1950 GMT 28 Apr 86 PY] /6091

CSO: 5100/2065

BRAZIL

SARNEY SCORES SUPERPOWERS' ARMS RACE AT DISARMAMENT CONFERENCE

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 2 Apr 86 p 5

[Text] Brasilia--President Jose Sarney yesterday sharply criticized the big superpowers for continuing "to ignore the political and legal obligations they formally assumed to reverse the arms race, with the consequent reduction of the waste of resources of which so many are in such need." That was Sarney's message to the more developed nations, read yesterday morning in Geneva by Ambassador Celso Antonio de Souza e Silva during his chairmanship of the disarmament conference.

"It was with that concern, which I believe is shared by all, that I established the second priority of Brazilian foreign policy: a just economic order that may be reflected as of now in equitable procedures in the management of the debt crisis," wrote President Sarney in the message delivered by Souza e Silva. This is the first time that Brazil has presided over the disarmament conference, a position occupied in rotation by the 40 member countries.

Following is the full text of President Sarney's message read in Geneva:

"At this time, in the current month of April, when the honor of presiding over the disarmament conference falls to Brazil, I wish to reiterate in a formal and solemn manner my government's commitment to the efforts and purposes of the only multilateral forum with the mandate of the international community to negotiate measures and agreements that are of vital interest to the peace and security of all countries.

"This is the same commitment that Brazil assumed a quarter of a century ago when the 18-Nation Disarmament Committee, of which we were a member, was instituted. Since then, we have maintained the same line of conduct with absolute fidelity.

"At a recent meeting with all the ministers of state of my government, last 20 February, when I disclosed the basic guidelines of the present administration, I established the priorities of our foreign policy, the first of which is phrased in the following terms: 'Disarmament and relaxation of tensions, to which Brazil will make a contribution inspired in its tradition of conciliation, balance and realism.'

"I am certain that this priority is in accord with the apprehensions and anxieties not only of the 40 member governments of this distinguished forum, but also of all the peoples of the world. Nor could it be otherwise. While a large part of mankind nourishes itself with little more than the hope of survival, direct and indirect military expenditures approach the neighborhood of \$1 trillion annually, adding a redoubled threat to the survival of all. While developing countries such as Brazil face severe sacrifices, including that of their ideal growth rate, in order to honor and settle their international commitments, the richer and superarmed countries continue to ignore the political and legal obligations they formally assumed to reverse the arms race, with the consequent reduction of the waste of resources of which so many are in such need.

"It was with that concern, which I believe is shared by all, that I established the second priority of Brazilian foreign policy: 'A just economic order that may be reflected as of now in equitable procedures in the management of the debt crisis.'

"De facto situations that only tend to aggravate the differences of wealth and power among nations have already gone on too long. Those tendencies and the negativistic expectations that nurture them must be reversed. Brazil hailed the resumption of bilateral negotiations between the United States and the Soviet Union and noted with satisfaction the common objective of their leaders that, sooner or later, mankind should live free of nuclear arms. Without relinquishing our right to express an opinion and participate in decisions taken by the big powers that may affect our interests, we follow with increased attention the proposals and counterproposals that seek to draw the conflicting positions closer together, especially of the more strongly armed nations.

"For our part and in accordance with our means, we have not spared efforts or avoided commitments that might contribute to understandings and, particularly, to enlarging the areas in which the nuclear weapon should be totally banned.

"We adopted the option in favor of its proscription in the national territory and, later, we signed and ratified the treaty proscribing nuclear weapons in Latin America. More recently, at the opening of the proceedings of the 40th Session of the UN General Assembly, last 23 September, I had the opportunity to propose the extension of that ban to the South Atlantic, when I declared that 'Brazil will exert every effort within its power to preserve the South Atlantic as an area of peace, detached from the arms race, from the presence of nuclear weapons, and from any form of confrontation originating in other regions.'

"Your combined efforts in search of common objectives, raising the collective interests of the international community above the transitory and particular interests of each one, will make it possible for the important tasks that have been entrusted to you ultimately to be fulfilled.

"With those purposes in view, and with a genuine spirit of cooperation, in the name of the Brazilian Government, I express my best wishes for the success of the present and future efforts of the disarmament conference."

8711/12859
CSO: 5200/2012

BRAZIL

CESP OPPOSES CONSTRUCTION OF MORE POWER PLANTS

Sao Paulo GAZETA MERCANTIL in Portuguese 26 Mar 86 p 20

[Text] Rio—The construction of one more nuclear plant could compromise the investment capacity of the electric sector and aggravate the inadequate situation of the power transmission lines, which has been causing "blackouts" in the country. That warning was repeated yesterday by the director of the Sao Paulo Power Company (CESP), Joaquim Francisco de Carvalho.

According to him, it is ELETROBAS that should express its opinion about the need and the time for the construction of plants because "it has much more complete and detailed information on hydroelectric utilization and the growth of consumption of electricity." Carvalho is fighting against the tendency of the Commission on Reevaluation of the Nuclear Program to recommend the construction of another nuclear plant with German technology.

Carvalho believes that Brazil has a period of approximately 30 years to plan, build, and test a prototype of a power reactor and then to build it on an industrial scale according to demand. "We would have time to 'reinvent the wheel,' guaranteeing our autonomy in that sector without the scandalous expenditures in hard currencies. Meanwhile, KKK [presumably meant: KWU] and Siemens are against that reinvention of the wheel because if we did so those companies would lose the captive market they have in Brazil," he pointed out. Carvalho considers that the country should create its own technology in the nuclear sector as has already been done in the aeronautics sector and is being done in the informatics sector.

According to him, Brazil has more economical and technically accessible sources for the generation of energy, such as hydroelectric energy and anthracite coal, sufficient to meet demand until the year 2010. However, that will be possible if investments are made in the construction of hydroelectric power plants in accordance with the program already stipulated by ELETROBRAS. In addition to that, the hydroelectric plants should be interlinked to the national system.

Carvalho then pointed out that the excess generation of the hydroelectric plants of the Parnaiba River (Sao Simao, Itumbiara, and Emborcação) could be transferred to the Southern Region to cover demand until the year 2000, with an average annual increase of electric energy consumption of 6.8 percent. Carvalho estimated that the country should invest \$4 million per year in generation and \$600 million per year in transmission.

8711/7051
CSO: 5100/2061

BRAZIL

NUCLEBRAS CHIEF ON CONTINUING ASBORPTION OF FRG TECHNOLOGY

Rio de Janeiro JORNAL DO COMMERIO in Portuguese 5 Apr 86 p 13

[Text] To proceed with the Angra-II and Angra-III projects and to complete the first uranium-enrichment cascade that is being built by NUCLEBRAS--those are the principal measures that the president of the company, Licinio Seabra, expects to be indicated by the Commission on Reevaluation of the Brazilian Nuclear Program, which will present a final document to the Ministry of Mines and Energy defining the fate of the country's nuclear energy, on the 19th of this month.

In an interview with the JORNAL DO COMMERIO yesterday, Licinio Seabra also expressed NUCLEBRAS' interest in proceeding with the process of assimilation of German technology by the Brazilians. This would permit nationalization of the technology and preservation of the national industry that emerged from the Brazilian-German agreement signed in 1975, he argued.

The president of NUCLEBRAS declared that, at the beginning of the year 2000, Brazil will depend on nuclear energy to guarantee meeting internal demand. In order to proceed with the Angra-II construction project, the completion of which is scheduled for 1992, it will be necessary to release around 2 billion cruzados. At the present time, the rate of construction of Angra-II is quite slow, Licinio Seabra pointed out.

NUCLEBRAS is delaying its investments scheduled for this year because, thus far, the federal government has not released the funds intended for the company's overall expenditures, estimated at the beginning of the year at 23 trillion cruzeiros. An interministerial commission to reevaluate that program of overall expenditures of the state enterprise is expected to recommend a 20 percent cut in those funds to the Ministry of Mines and Energy, Licinio Seabra revealed.

Licinio Seabra reiterated that NUCLEBRAS is facing a difficult financial crisis that could result in the privatization of one of its subsidiaries, Nuclebras Monazitic Sands Corporation (NUCLEMON). This is a profitable company, very attractive to the business community, he declared. However, he discounted the possibility of another subsidiary, the Nuclebras Heavy Equipment Corporation (NUCLEP), going to private enterprise because it is already operating at more than 50 percent idle capacity.

NUCLEP is a patrimony of NUCLEBRAS, declared Licinio Seabra. He defended keeping the company under state control because he believes that in the coming years, NUCLEP will be able to compete at the international level with other companies engaged in the construction of heavy equipment for nuclear plants. NUCLEP has a physical idle capacity, he concluded, but all of its employees (about 750) are fully active.

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CS0: 5100/2061

BRAZIL

COMMITTEE REPORT ON TALKS WITH ARGENTINA, ACCORD WITH FRG

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 18 Apr 86 p 24

[Text] Brasilia—In a report submitted to President Jose Sarney yesterday, the committee for evaluating the Brazilian nuclear program considers it "extremely important" for Brazil and Argentina to seek more effective mechanisms for negotiation in the nuclear area so as to avoid an arms race in Latin America in the near future that would endanger the life of the planet even further.

Prepared in 180 days on instructions from the president with a view to the adoption of a new nuclear policy for the country, the report is signed by 12 scientists, professors, and experts. It also concludes that nuclear research and its gradual Brazilianization are also of great importance. On the basis of projections by the Brazilian Electric Power Companies, Inc. (ELETROBRAS), it predicts that hydroelectric potential will be exhausted sometime between the years 2010 and 2015, at which point Brazil is expected to begin consuming a minimum of 3,000 megawatts of thermoelectric power a year to satisfy the market.

According to Jose Israel Vargas, chairman of the committee, professor, and adviser to Minister Aureliano Chaves, one recommendation is to begin construction of a new nuclear power plant in 1989 at a site still to be determined. This would be in addition to the completion of work on the Angra II and III plants in Rio de Janeiro.

To ensure the continuity of the investments it considers necessary, the committee estimates expenditures on the order of \$2.7 billion and proposes that several NUCLEBRAS subsidiaries be abolished to save \$1.7 billion on programs already underway. In place of the firms to be abolished—NUCLEP [NUCLEBRAS Heavy Equipment, Inc.], NUCLEI [NUCLEBRAS Isotope Enrichment, Inc.], and NUCLAM [NUCLEBRAS Mining Assistance, Inc.]—the committee suggests the establishment of an ELETROBRAS subsidiary to be responsible exclusively for building and operating nuclear power plants.

It also recommends that the national commission for radiological protection and national safety be set up under the authority of the Office of the President of the Republic. That commission would be in charge of regulation,

inspection, and licensing and would consist of representatives of the government, the scientific community, and society. Vargas said: "Our nuclear policy must be transparent."

With a view to restimulating the nuclear policy, which "is going badly and is in serious difficulties," according to Jose Israel Vargas, the committee is also recommending that the cooperation agreement with the FRG on the peaceful use of nuclear energy be kept in force. It is the conclusion of the committee members that society's lack of participation in the agreement signed between the two countries in 1974 is responsible for the public's current lack of faith in the Brazilian nuclear program. According to the committee, the absorption of West German technology, together with construction of another power plant, will provide Brazilian experts with the necessary know-how for creating domestic technology.

The report devotes its first paragraphs to the peaceful use of nuclear energy. As one mechanism for preventing a military dispute between Brazil and Argentina, the committee suggests that the two countries establish a system for the mutual inspection of their nuclear programs. In the opinion of the committee's chairman, the need to prevent an arms race is justified by the prospect of a nuclear war involving the world's great economic powers.

11798

CSO: 5100/2062

BRAZIL

NUCLEAR POWER AGREEMENT SIGNED WITH EGYPT

PY010400 Sao Paulo FOLHA DE SAO PAULO in Portuguese 30 Apr 86 p 15

[Text] Brazil will participate in the Egyptian nuclear program by exporting technology, equipment, and possibly complete power plants. In that regard, a cooperation agreement was signed yesterday between mines and energy minister Aureliano Chaves and Egyptian Electricity and Energy Minister Mahir Abazah.

Upon leaving Minister Aureliano Chaves' office, Mahir Abazah reported that Egypt plans to build three nuclear power plants to generate electrical power through the year 2000. An international bid is being held for the construction of the first nuclear power plant worth \$1.4 billion. The United States, FRG, and France are bidding to build this plant, which will put out 1,000 megawatts and whose characteristics are similar to those of the Angra 2 [power plant] under construction in Rio de Janeiro. Mahir Abazah said that Brazil may participate in the next bids provided it is capable of competing in the international market.

The cooperation agreement, which the Egyptian minister termed an "umbrella agreement," also contemplates a general exchange of services in the electrical power supply field such as construction of hydroelectric and thermoelectric power plants and the development of unconventional energy sources.

/9274
CSO: 5100/2064

BRAZIL

BRIEFS

ANGRA I WASTE PROBLEM—What is to be done with the 700 200-liter drums of low- and medium-level radioactive waste that are produced every year by the Angra I nuclear power plant? That big problem was brought up yesterday by Marcio Costa, manager of nuclear operations for Furnas Electric Power Plants, Inc., during the First General Congress on Nuclear Energy at the Gloria Hotel. According to Marcio Costa, NUCLEBRAS and the National Nuclear Energy Commission (CNEN) need to find a way of disposing of nuclear waste and to choose the ideal site for its permanent storage. If that problem is not solved soon—within 10 years—the lack of a site for storing nuclear waste may make the use of nuclear power in this country impossible. The waste, along with materials, clothing, and tools contaminated by radiation, is currently being placed in drums of steel and concrete and kept at a site within the power plant itself, which has room to store 7 or 8 years' worth. Highly radioactive waste, which results from burning the fuel at Angra I and is the most dangerous type, is kept in cooling ponds at the plant to allow its radioactivity to decrease. In this case as well, that waste will have to be taken sometime in the future either to a reprocessing plant or to a final storage site. [Text] [Rio de Janeiro O GLOBO in Portuguese 18 Mar 86 p 26] 11798

ITU WASTE SITE DISCUSSIONS—Itu—The atomic waste stored in Itu was again discussed by the interministerial committee comprised of representatives of the Ministry of the Environment, Ministry of Mines and Energy, the state government, and the municipality. Present at the meeting, which began at 1100 hours yesterday, were Gilberto Campos and Ivan Antunes, representatives of NUCLEMON and NUCLEBRAS. The two experts were invited to present clarifications about the material stored in Itu and the possibility of radioactive contamination at that site. Gilberto Campos, a nuclear physicist and director of NUCLEMON, declared that the material stored in Itu, known as "cake II," or crude thorium hydroxide (20 percent) and Uranium (1 percent), material that will be utilized in the future production of thorium and uranium, is not atomic waste, as is being reported. The nuclear physicist explained the reasons for the choice of Itu for installation of the storage facility and discounted the possibility of contamination. According to him, an increase of NUCLEMON's production had been anticipated and for that reason it was necessary to build a new plant and a storage facility to supply the factory. That project, which according to the director of NUCLEMON was going to generate 400 direct jobs, had to be suspended because of the people's protests. [Text] [Sao Paulo O ESTADO DE SAO PAULO in Portuguese 8 Apr 86 p 46] 8711/7051

CSO: 5100/2061

BANGLADESH

SAFETY MEASURES FOR NUCLEAR POWER USE URGED

Dhaka THE NEW NATION in English 4 May 86 p 5

[Editorial]

When a disaster is compounded by mystery the outcome is even more unsettling. The Chernobyl nuclear disaster near Kiev in the Soviet Union could have been catastrophic for the inhabitants in a number of countries. And yet the world has been kept guessing as to what exactly happened. It is said to be the policy of the government of Mikhail Gorbachev to be more communicative on bad news. In spite of that, the habitual Soviet reticence which tends to suppress information even on plane crashes, was hardly broken except in occasional and guarded disclosures. A Soviet Embassy official, perhaps forced by circumstances, admitted before the U.S. Congress on Thursday, that the Chernobyl nuclear accident was not over and could still threaten people inside and outside the Soviet Union. This is far from the candour required at a time of international emergency. Not only the details of the accident are kept secret but casualty figures released by the Soviet government (2 fatalities and 197 injuries) are at wide variance with Western estimates. Western experts have not ruled out a melt down of the reactor in which case much higher casualties are apprehended. The Soviet Union has not lifted its blanket of secrecy and perhaps disinformation even while it is consulting Western experts on how to deal with the reactor fire. In its latest announcement the Soviet Union has only sought to reassure the world that there is no danger from radioactive fall-

out. But even if the leakage of radioactivity is over, the tragedy is not over as those already exposed will continue to be at risk. And those outside the Soviet Union can only speculate whether or how far the water and the environment as a whole is contaminated.

As the victim of an accident the Soviet Union has drawn international sympathy. President Ronald Reagan has expressed deep regret to the Soviet leader Mikhail Gorbachev over the accident and offered U.S. assistance. The West German Foreign Minister has said that international experts should be given the chance to visit the site of accident.

This was not the first nuclear accident but the worst so far. Almost synchronising with the Chernobyl disaster a fire broke out in a heavy water plant in Orissa in India causing fears that this might cause leakage of radioactivity if radioactive materials were stored in the plant. And this, again, was the second accident in Indian atomic plants within a few weeks.

Mankind is still on the threshold of the age of nuclear power. Such accidents underscore the fact that the great possibilities of nuclear energy are not untrammelled by great risks. Safety measures should be made more fool-proof and closer international cooperation in the matter should be achieved. A Swedish expert is quoted as saying that the lack of advanced computerised reactor safety system in Soviet nuclear plants could have been a major factor behind the accident.

Since the fall-out from a nuclear accident cannot be kept confined to any country and the risk is international, the development of nuclear power should not be carried on without the knowledge and participation of the others who share the same planet and same atmosphere and are equally at risk.

/13104

CSO: 5150/0103

INDIA

GANDHI VIEWS SAFETY STANDARDS IN NUCLEAR REACTORS

NK091359 Delhi General Overseas Service in English 1330 GMT 9 May 86

[Text]

The prime minister, Mr Rajiv Gandhi, has said there is no scope for accidents in the nuclear power plants in the country because of the inbuilt safety features. Addressing the Consultative Committee of members of parliament of his ministry in New Delhi today, he said Indian nuclear reactors are being operated in accordance with internationally accepted safety standards. Allaying the fears of the members that a nuclear power station could explode like a bomb, the prime minister said this is a totally wrong perception since it is not physically possible for the fuel in a reactor to agglomerate in a manner that it could set off an uncontrolled nuclear chain reaction.

The members were informed that the total financial outlay of the nuclear power program is about 140,000 million rupees based on the 1983 price level. The members were informed that today the country's nuclear power program is earning between 1,500 and 2,000 million rupees a year from the sale of electricity. They were also told that availability of heavy water will not be a constraint on the nuclear power program. There are at present five heavy water plants in the country. Taking into account the profile for a 10,000 megawatt nuclear power program, three more heavy water plants are visualized. The first of these at Hazira is expected to be completed in 1991.

The members were also informed that the currently known uranium reserves of the country could support the pressurized heavy water reactor program of about 10,000 megawatt for a designed life of 30 years.

/12851
CSO: 5150/0101

INDIA

NUCLEAR ENERGY CALLED ESSENTIAL FOR COUNTRY'S PROGRESS

New Delhi PATRIOT in English 18 Apr 86 p 4

[Editorial: "N-Energy for Progress"]

[Text]

The government's reiteration that the country is self-reliant in the peaceful uses of nuclear technology, particularly in the field of energy, will go a long way to reassure the people that the pace of development will be speeded up to overcome the lag of the past years. India can now be justifiably proud that its nuclear scientists have not only gone ahead to establish on their own the nuclear reactors now functioning in this country; have created the facilities for the indigenous manufacture of heavy water, and have developed the required technology for the disposal of radio-active wastes. This is extremely welcome information because some people have already started crying wolf about the dangers emanating from the accumulation of used nuclear fuel. These measures have been necessary to ensure fail-safe precautions and reassure our people that no effort has been spared to make India's peaceful uses of nuclear energy not only safe but beneficial as well. Minister for Science and Technology Shivraj Patil has once again asserted that the assessed safe limits of radiation around our nuclear plants and reactors have not been crossed, and are within those prescribed by the International Commission on Radiological Protection.

There are hardly two opinions on the need for adequate supply of electricity to enable the country to progress with confidence, equipped with the tools and infrastructure to meet the demands of the twenty-first century. It is in this context that the indigenously developed fast-breeder reactor technology has become extremely useful for the nuclear energy programme for India. There is general recognition that the sources of fossil fuel depleting very fast and the search is on for reliable alternatives for maintaining and rapidly

expanding the production of power. The advantage with the fast-breeder reactors is that they produce more fuel than they burn. Well-known nuclear scientist H N Sethna has pointed out that the fast-breeder reactors using thorium as the fissile material, was of particular relevance to India because the country had a huge reserve of thorium, six times more than that of uranium. Thus, fuel life could be stretched six times by using thorium in our fast-breeder reactors.

The point is that efforts have to be made to augment our power production fast, and distribute it in the most profitable areas, keeping in view the country's development programmes for rapid socio-economic progress. The most useful input in this endeavour is nuclear energy. Our indigenously developed technology has provided us the opportunity to use it to raise the standard of life of our people, the overwhelming majority of whom still suffer from lack of proper nutrition, clothing, housing and employment, to secure these imperatives for a healthy existence. The criticism of the use of nuclear energy, adverting to its presumed dangers, might prove to be only a devious way to curb this country's efforts to modernise and progress.

/12851

CSO: 5150/0099

INDIA

MINISTER ADDRESSES UN DISARMAMENT COMMITTEE

Calcutta THE TELEGRAPH in English 24 Apr 86 p 3

[Text]

Geneva, April 23: India's minister of state for external affairs, Mr K. R. Narayanan, yesterday supported the efforts of the UN conference on disarmament for a comprehensive test ban treaty and the prevention of an arms race in outer space.

Addressing the 40-member UN conference on disarmament, Mr Narayanan said "With the arms race escalating on earth and reaching menacingly to outer space and with nuclear weapons acquiring an increasingly awesome capacity for world destruction and life-extinction, the question of disarmament, especially nuclear, has assumed a compulsive priority over almost every other problem facing humanity today."

Expressing "dismay" that the "conference has not been allowed to execute the mandate assigned to it" (to achieve complete and general global disarmament), Mr Narayanan said "between 1961 and now, the world has seen an unprecedented smassing of destructive weaponry in the name of security and self-defence."

He rejected the "doctrine of world peace through nuclear deterrence" as "dangerous and outdated," saying that "there have been over 130 wars in the world during the so-called "long nuclear peace" in which "the global strategic confrontation of the great powers and the arms race played an instigating or inflammatory role."

Measures for the avoidance of a "nuclear cataclysm" have to be accompanied "by a concrete programme for nuclear disarmament," said Mr Narayanan. He insisted that "in this regard a comprehensive test ban treaty claims the highest priority," and reiterated an earlier nonaligned call to the US to "stop nuclear weapon tests" and to the Soviet Union "to refrain from these tests" in accordance with its August moratorium. He urged the conference to constitute a committee "with an appropriate negotiating mandate" to pursue this issue. Mr Narayanan's call for multilateral negotiations clashes with the repeated American refusal to grant the conference a negotiating mandate on the issue.

/12851

CSO: 5150/0100

INDIA

PAKISTAN, INDIAN OFFICIALS DISCUSS NUCLEAR THREAT

BK191122 Karachi Domestic Service in English 1005 GMT 19 Apr 86

[Text] Pakistan has once again categorically told India that its nuclear program was absolutely for peaceful purposes and that Pakistan has neither the intention nor the resources and capability for nuclear weapon program.

This reiteration was made by Foreign Secretary Mr Niaz A. Naik during his talks with his Indian counterpart, Mr Venkateswaran, in New Delhi yesterday. The question was raised in the context of discussion on the understanding reached between President Mohammad Ziaul Haq and the Indian prime minister, Mr Rajiv Gandhi, on the 17th of December last that neither side would attack each other's nuclear installations. Draft of the agreement to this effect was almost ready.

The foreign secretary said to demonstrate its seriousness Pakistan had made a number of proposals at international, regional, and bilateral levels to achieve the objective of keeping South Asia free of nuclear weapons. He wondered why the question was still raised in India that there is concern that Pakistan's program is not entirely for peaceful purposes. Strongly refuting the allegation, the foreign secretary said this highly organized campaign was just to malign Pakistan.

The foreign secretary said both sides agreed that mutual dialogue must continue and that the momentum of progress in normalization process which had slowed in recent past must be restored. Both sides agreed to propose possible dates shortly for the meetings for subcommittees in New Delhi and a joint commission meeting in Islamabad.

The two sides are also in the process of negotiating mutually convenient date for the second round of talks between the two defense secretaries to further take up their discussions (on) Siachen Glacier. They accepted to meet in the second half of next month.

/9274
CSO: 5150/0092

INDIA

MINISTER ANSWERS QUESTIONS ON NUCLEAR POWER

New Delhi PATRIOT in English 17 Apr 86 p 5

[Text]

India has become self-reliant in nuclear technology, Minister of State for Science and Technology Shivraj V Patil told the Lok Sabha on Wednesday, reports PTL.

The Minister, who was during the question hour allaying fears of members that it was hazardous to have nuclear power plants and reactors, said the country had technology for the establishment of reactors and production of heavy water. The country had also developed technology for the disposal of radio active wastes.

Replying to supplementaries Mr Patil said that nuclear power plants and reactors were not hazardous to the public.

The country needed more energy and the nuclear power would have to meet 25 per cent of the requirement.

The Government, he said, had taken steps to see that the international limit on the emission of radiation from the nuclear plants and reactors was not crossed. "There should not be any fear in the minds of the people", Mr Patil told Mr Satyendra Narayan

Sinha and others.

Mr Patil said that effluents were constantly monitored to ensure compliance with prescribed limits in conformity with the International Commission on Radiological Protection Limits.

Atomic waste management had been assigned high priority from the very inception of the nuclear energy programme. Design of the nuclear power plants incorporated multiple safety systems on the fail-safe principle to ensure that effluents from the plant including gaseous and liquid radioactive releases were well within the prescribed limits during normal and postulated off-normal situations, he said.

Mr Patil contended that there were 4,000 nuclear power plants in the world and not a single person died because of radiation from these plants, as the measures adopted in the establishment of such plants were very stringent. "From this it is clear that having nuclear power reactor is not dangerous", he said.

The Minister also pointed out

that the atmosphere was not free from radiation. The natural source of radiation in the atmosphere itself, he said was 85 per cent. The amount of radiation caused on account of weapons, fall-out was five per cent and occupation four per cent. The radioactive discharge from nuclear plants was only 1 per cent.

Mr Patil said that atomic energy played an important role in the energy programmes in various countries. In France 75 per cent of the energy came only from nuclear technology, Japan and America also had many such plants.

Mr Patil did not agree with Mr P Kolandaivelu that the radiation caused by the nuclear plants crippled children. The amount of radiation needed to cripple children was much higher than what was emitted by the nuclear plants.

When Mr S Jaipal Reddy said that no action had been taken on a complaint that the nuclear fuel complex near Hyderabad posed radiation hazard, Mr Patil said it was examined and found that the limit had not been exceeded.

/9317

CSO: 5150/0096

INDIA

USES OF KALPAKKAN NEUTRON SOURCE REACTOR TOLD

Bombay THE TIMES OF INDIA in English 29 Mar 86 p 15

[Article by S. Dharmarajan]

[Text] Madras, March 28--Kamini, a compact U-233-fuelled neutron source reactor, is under construction at the Indira Gandhi centre for atomic research at Kalpakkam, near here.

It is primarily meant for neutron radiography of fuel pins, sub-assemblies and other active components of the fast breeder test reactor and is expected to become operational later this year.

The neutron radiography, which has emerged in recent years as an important non-destructive test technique, is also intended to be used for space and other applications.

The source reactor of the swimming pool type is light, water-moderated and cooled by natural convection. Designed to operate at 30-KW nominal power, it can be uprated to 100 kw.

It will be housed in the basement below one of the post-irradiation examination hot cells.

The process for neutron radiography is to lower an object in front of the neutron beam through a precisely aligned guide tube that will also act as a containment to the irradiated objects.

A moving case traveling in a precisely aligned manner in the guide tube holds the object to be radiographed and it is lowered to the neutron beam level using a stepper motor lifting mechanism. It has additional safety features for lifting the irradiated object alone in case of necessity.

A specially-designed cassette drive and feed mechanism assures six to nine radiography shots to be taken without human entry into the neutron radiography area.

According to scientists, the design avoids the need for transfer of irradiated objects from the hot cells for radiography.

Kamini has facilities for radiation physics studies apart from its use for neutron radiography and activation analysis.

Key components such as a reactor tank, biological shield and water tank are ready for installation. Other essential systems such as safety control plate drives, nuclear instrumentation and experimental facilities are at an advanced stage of fabrication.

The defence laboratory at Jodhpur has an indigenously-designed neutron radiography camera using ²⁵²Cf (Californium) neutron source. The camera design is based on calculations made to arrive at radiologically-safe shielded camera using iron and cadmium sheets. It works as one of the moderators and lead blocks. It helps obtain optimum thermal neutron flux in the film plane and to attain acceptable contrast and resolution in radiography.

/9317

CSO: 5150/0094

INDIA

MANY NEW AREAS WITH URANIUM POTENTIAL FOUND

New Delhi PATRIOT in English 14 Apr 86 p 5

[Text]

Many new areas of fair to high uranium potential have been delineated following an integrated multi-disciplinary approach by the Atomic Minerals Division (AMD). In addition, more reserves were proved during 1985-86 in areas already taken up for drilling, reports UNI.

The largest single contribution to the ore reserves is from the Turamdih West deposit in Singhbhum district of Bihar in which an ore body with thickness upto 30 metres containing a few thousand tonnes of uranium were proved within a shallow depth of 100-150 metres.

Possibilities of open cast mining are being examined in this area, according to AMD.

Considerable progress has also been made in resource generation at Araballi (Karnataka), Mohuldih (Bihar) and Bhandaritola and Jajewali (Madhya Pradesh).

Airborne gamma ray spectrometric and magnetic (AGSM) surveys and application of remote sensing techniques were deployed to narrow down target areas for ground checking of atomic minerals. During 1985-86, airborne surveys were carried out in parts of Andhra Pradesh, Bihar, Orissa, West Bengal and Karnataka.

Contour maps for total radioactivity, uranium, thorium and potassium contents were generated for an area of 94,000 sq kms.

Following the ground survey, extensions of the radioactive quartz-pebble conglomerate with uraninite, pyrite and sporadic traces of gold have been traced in north and south Kanara, Shimoga, Chitradurga and Tumkur districts of Karnataka.

tricts of Karnataka.

New horizons with both uraninite and other uranium-thorium minerals were discovered in Dhanjori formations in Singhbhum district, Bihar and in Orumahimshamoi-Badampahar iron-ore sequence in Mayurbhanj district, Orissa.

During the year, systematic investigations were taken up in all the iron and iron-manganese belts of India to locate such uraniferous horizons and delineate commercially exploitable resources, according to the annual report of the Department of Atomic Energy.

Investigations are in progress following the detection of significant uranium anomalies in Subansiri and West Siang district of Arunachal Pradesh, near Antri-Deharipur in Mahendragarh district of Haryana and along the eastern margin of the Cuddapah basin in Kandrugutta, Nellore district of Andhra Pradesh.

Other localities drilled for exploration of uranium during the year were at Bhatin in Singhbhum district and Nagnaha in Palamu district of Bihar, Brijnagar in Tehri district of Uttar Pradesh, Walikunj, Yellaki in South Kanara district of Karnataka, Gomaghat, Philongdikoin in Khao hills district of Meghalaya and in the Siwalik sandstones of Hamirpur basin in Himachal Pradesh and in Saharanpur district of Uttar Pradesh.

Reconnaissance surveys, sampling by drilling and laboratory investigations for estimation of heavy minerals reserve for monazite and ilmenite were carried out covering an area of 25.26 sq kms in beach and coastal dune sands

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CSO: 5150/0097

INDIA

NEW BOOK URGES EXERCISE OF NUCLEAR OPTION

Bombay THE TIMES OF INDIA in English 17 Apr 86 p 8

[Article by Inder Malhotra]

[Text]

THREE major developments recently have once again brought to the fore the nuclear issue and the grim challenges it poses to this country. The first and foremost of these is the wilful wrecking by the Reagan administration in the U.S. of the unilateral Soviet moratorium on underground nuclear testing announced eight months ago.

Mr. Gorbachev persisted with the moratorium even though the U.S. mocked his initiative not once, but twice, first just after Christmas and then just before Easter. Last week's "mighty oak" detonation in the Nevada desert, however, proved to be the proverbial last straw. Even so, while announcing the end of the moratorium, he offered to continue talking about arms control, to revert to the moratorium, if the Americans agreed to observe similar self-restraint.

The U.S. has responded, however, with the haughty declaration that nuclear testing would go on. In fact, a series of tests are in an advanced stage of preparation and almost all of them are connected with the "Star Wars" scenario, otherwise called the Strategic Defence Initiative (SDI). One, scheduled for May 8, will test a device designated "Tajo" and believed to be a warhead. Devices of even greater complexity and sophistication will be tested in subsequent detonations which are likely to continue right until early next year.

In short, any expectation that the nuclear "Big Boys" might move,

however grudgingly and gradually, towards nuclear disarmament lies shattered. On the contrary, both the ABM treaty, the only genuine nuclear arms control measure agreed to, by the two superpowers, and the SALT-II, which the two sides are committed to observing, even though it has not been ratified by the U.S. Congress, are coming under increasingly unbearable strain. These two crucial accords cannot survive if, instead of being eliminated from the earth, the nuclear arms race is exported to outer space also.

The second pertinent development to merit attention is that after nearly 14 weeks of silence on the subject, Mr. Rajiv Gandhi has spoken again of Pakistan's continuing effort to build the bomb and the inexorable logic, for India, of this relentless Pakistani pursuit.

The Prime Minister's statement, in response to widespread concern expressed during the Lok Sabha's defence debate, has to be read along with an ominous report from Washington, which neither the Americans nor the Pakistanis have cared to deny.

Flat Refusal

According to this report, the U.S. ambassador-at-large, Mr. Richard T. Kennedy has flatly refused to answer in an "open" Congressional committee session any question relating to U.S. belief or suspicion that Pakistan has attained, at its Kahuta centrifuge plant, 30 per cent enrichment of

uranium, in violation of General Zia's reported assurance to President Reagan that he would restrict uranium enrichment at Kahuta to five per cent only.

There are two points about this report which are crucial, indeed critical. First, under the established norms on Capitol Hill, a top American official's refusal to discuss any matter during an open hearing, means that whatever is being alleged is true but the administration does not want to talk about it publicly.

Secondly, and more importantly, anyone capable of enriching natural uranium to the level of three per cent can easily produce weapons-grade fissile material which means enrichment to a level of over 90 per cent. The 30 per cent enrichment at Kahuta, therefore, has no great technological import. But its political implications are immense and far-reaching. Quite clearly, the Zia regime feels confident that it can go on expanding the frontiers of its bomb-building programme without putting at risk U.S. military assistance and political support as long as it refrains from actually detonating a nuclear device.

The third and most recent development is also the most serious, in fact blood-chilling. It is the outrageous U.S. attack on Libya, which has been condemned by both foes and friends, with the solitary exception of Mrs. Thatcher's Britain. But such universal condemnation has not prevented the U.S. from

repeating the effrontery or from threatening to do it, yet again.

In these circumstances, is it unreasonable to conclude that to expect nuclear weapon powers never to use their deadly arsenals vis-a-vis non-nuclear nations for nuclear blackmail, if not also a limited "lesson-teaching" exercise, is nothing short of a dangerous delusion? There is, however, the spectre of the nuclear winter decimating all life even in regions far removed from the scene of a nuclear exchange. All this makes utter nonsense of the cosy belief, sedulously fostered by some, that the issue of eliminating nuclear weapons is an esoteric one, concerning Big Powers alone, and that if only India and Pakistan can agree jointly to forswear nuclear weapons the sub-continent can afford to sleep soundly.

Coherent Treatise

Against this dismal backdrop, it is both appropriate and timely that the Institute for Defence Studies and Analyses should have just published a comprehensive and coherent treatise (*) on the nuclear issue, in all its aspects, especially as it affects this country in more ways than one.

Edited by the institute's director, Mr. K. Subrahmanyam, the book does not necessarily represent the IDSA's views though all its contributors, save one, belong to it. Air Commodore Jasjit Singh has discussed exhaustively and in historical perspective the threats and challenges that nuclear weapons have posed since that awesome test in the New Mexico desert 41 years ago. He has also listed no fewer than 17 occasions on which threats of use of nuclear weapons have been held out, mostly against third world countries. Mr. C. Raja Mohan has argued painstakingly that nuclear-free zones have turned out to be more an illusion than a reality, while Mr. P. K. S. Nambudiri has dealt with the problem of nuclear terrorism on the one hand and, on the other, nuclear perceptions and policies of India and Pakistan.

All of them have done a competent job. But it is Mr. Subrahmanyam who has con-

tributed the meatiest part of the analysis, taking up such vital questions as nuclear deterrence, role of national power, India's response to the gathering challenges and the Gorbachev proposals for the elimination of nuclear weapons by the turn of the century. The chapter clinically dissecting the endlessly controversial question of mutual inspection and verification has been written jointly by Mr. R. R. Subramanian and Mr. K. Subrahmanyam. No wonder then that the book as a whole bears the Subrahmanyam stamp.

If Mr. Subrahmanyam's views on the nuclear issue are well known, so is his formidable expertise on this highly complex and complicated subject. He has brought this to bear on the task of planning and editing the book and writing some of its most important chapters. Also, in doing so he has refreshingly refrained from being unduly vehement which is sometimes his wont. The result is a book which is extremely informative and ought to be required reading for all those who have any claim to a say on this country's nuclear policy.

Whether one agrees with the collective conclusions of the contributors or not is immaterial. What matters is that the elaborate and well-reasoned arguments in support of the book's main thesis—that if this country is really serious about its struggle for eliminating nuclear weapons from the world then it must exercise its nuclear option by 1990 or five years before the present iniquitous NPT system is to become permanent — should be weighed carefully and objectively before they are either accepted or rejected. They should not be brushed aside or applauded on the basis of prejudice or preconceived notions.

Fee To Be Paid

"If India is to make a serious intervention in the disarmament debate and contribute to nuclear disarmament, acquiring nuclear capability is a fee that has to be paid", says Mr. Subrahmanyam. The only alternative to this policy, according to him, would be to live

permanently and helplessly with the nuclear weapons of "industrialised nations, their chosen client states and China", with all the risks of "coercive use of nuclear diplomacy" inherent in the situation.

The foregoing, it is needless to say, is a highly simplified summing up of a long and complex presentation which needs to be examined in full. The same goes for the reasoning behind the contention that to think of India's nuclear predicament merely in Indo-Pakistan terms would be a grievous error.

In this connection a high point of the book is the admirably brief and lucid chapter on Indo-Pakistan nuclear options written by the only non-IDSA contributor, Ambassador Rikhi Jaipal who has a vast experience of dealing with nuclear and disarmament issues. He has quoted irrefutable evidence to show that Pakistan's, especially Mr. Bhutto's, craving for the bomb goes back to the sixties and can in no way be regarded as a reaction to Pokhran, 1974; that Pakistan's current enrichment programme has no conceivable peaceful use; that a South Asian nuclear weapon-free zone would be a legal myth; and that mutual inspection and verification between India and Pakistan would create additional irritations without solving any problem.

All in all, the IDSA book is a welcome addition to indigenous literature on the nuclear question. Most of published material on the subject is a rehash, if not a reprint, of the western position on the issue in a totally different context. The book under review examines the matter from the Indian standpoint.

It is also commendable that rather than regard his book as the last word on the subject Mr. Subrahmanyam wants it to be the starting point of a great national debate. Such a debate is long overdue. And it should be devoid of sentimentality, sanctimony and self-righteousness. Only through rationality and realism can we cope with a problem that threatens the survival not only of India and Pakistan but of the entire mankind.

**India And The Nuclear Challenge, edited by K. Subrahmanyam (Lancer International, Rs. 195).*

INDIA

BRIEFS

IAEA VISIT PROPOSAL--Vienna, April 12 (PTI)--The International Atomic Energy Agency (IAEA) has proposed to send its operational review team to India to inspect conditions at the Tarapur nuclear power station. The agency's team leader, Mr Ferdinand L'Franzen, said there had, however, been no response from India so far. Since the team's inception in 1983, the agency had so far sent missions to South Korea, Yugoslavia, the Philippines, Pakistan, Brazil, Mexico, France and Finland. Mr M.S.R. Sarma, director of nuclear and industrial safety at the Indian Atomic Energy Regulatory Board, who is now here to attend a seminar, said the board had found the team's experience useful in evaluating Indian operational practices and procedures. [Text] [Calcutta THE TELEGRAPH in English 13 Apr 86 p 5] /9317

FIRST 500-MEGAWATT STATION--Tiruchirapalli, April 6--The country's first 500 MW nuclear power station will have been commissioned by next year though the location has not yet been decided, Mr M.R. Srinivasan, Chairman, Nuclear Power Board, told reporters here today, according to PTI. Several centres had been recommended Mr Srinivasan said, adding that Tarapur and Coodangulam in Tirunelveli district of Tamil Nadu would be more suitable than the other ones. Coodangulam, Mr Srinivasan said, was a coastal centre like Kalpakkam, making transport of heavy equipment easy. However, he pointed out that the site had to be chosen on the basis of the regional need for power. Mr Srinivasan said that the second unit of the Kalpakkam project would start functioning within a couple of days. Referring to the transformer failure in Unit One of Kalpakkam, he said that it was not true that the use of a wrong variety of oil had caused the breakdown of the transformer on March 21. [Text] [Calcutta THE STATESMAN in English 7 Apr 86 p 7] /9317

PLEA FOR MORATORIUM--New Delhi, March 28 (PTI)--Over 100 MPs belonging to different political parties today appealed to the U.S. President, Mr Ronald Reagan, to reciprocate the Soviet Union's moratorium on nuclear weapons tests. In a cable to the U.S. President, 114 MPs urged him to accept the Soviet offer before it expired by the end of this month. The MPs belong to the Congress, CPI, CPM, Telugu Desam, Janata, Forward Bloc, Congress-S, RSP, AIADMK, Asom Gana Parishad, Janwadi, National Conference and BJP. The moratorium on nuclear weapons tests, proposed by six nations

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including India, would pave the way for a comprehensive test ban treaty as the first stage to stop arms race and eventually to banish nuclear weapons from the world, the parliament members said. They also appealed to Mr Reagan to stop any programme for militarisation of outer space in order to take forward the spirit of the Geneva summit to fruitful negotiations and disarmament agreement. [Text] [Bombay THE TIMES OF INDIA in English 29 Mar 86 p 16] /9317

ATOMIC ENERGY COMMISSION--Dr Raja Ramanna will be the chairman of the reconstituted Atomic Energy Commission. He is at present the secretary of the Department of Atomic Energy. The commission will have now nine members. The other members are : Prof M. G. K. Menon, scientific adviser to the prime minister; Mr P. K. Kaul, cabinet secretary; Dr P. K. Iyenger, director of Bhabha Atomic Research Center; Mr S Venkataramanan, finance secretary; Dr M. R. Srinivasan, chairman of the Nuclear Power Board; Mr N. Srinivasan, chief executive of heavy water projects; Mr J. R. D. Tata, chairman of Tata Sons. Ltd; and Dr (P. V. Shikantan), director of Tata Institute of Fundamental Research. [Text] [Delhi Domestic Service in English 1530 GMT 18 Mar 86 RK1 /9274

HEAVY WATER PLANT--New Delhi, Apr 30 (AFP)--Hundreds of families fled in panic as a heavy-water plant caught fire in eastern Orissa state late Tuesday, the PRESS TRUST OF INDIA reported Wednesday. The blaze was triggered by a burst synthesis gas pipe line at the plant, run by the Indian Atomic Energy Department at Talcher, about 340 kilometres (212 miles) southwest of Calcutta. The fire was "devastating," the agency said, and caused hundreds of families to flee in panic. No casualties were reported, PTI said. Firefighters brought the blaze under control in about 90 minutes, the agency added. [Text] [BK301019 Hong Kong AFP in English 10008 GMT 30 Apr 86] /12851

RADIATION REPORT DENIED--The Government on Wednesday denied in the Lok Sabha that fish in the area off Kalpakkam coast was subjected to radiation from radionuclides discharged by the atomic power station, reports PTI. Radionuclides in the coastal waters--sea water, suspended silt, bottom sediments, aquatic organisms including fish and salt produced from sea water were measured routinely by the environmental survey laboratory of the health physics division, Bhabha Atomic Research Centre. [Text] [New Delhi PATRIOT in English 1 May 86 p 5] /12851

SHRIRAM 'LEAK' DENIED--New Delhi, April 27 (PTI)--The Shriram Institute of Industrial Research today denied that there was any "radioactive leak" from its applied radiation centre here. Commenting upon a report about a suspected radioactive leak at the Centre which is causing panic among the residents, Dr J. K. Nigam, director of the institute, said the allegations were "motivated and absurd." He said BARC, Bombay, had declared the safe for operation. Meanwhile, Dr S.K. Trikha, reader in Delhi university's department of physics and astrophysics, said readings on a portable Geiger counter taken outside the centre's boundary wall indicated that the radiation level was almost double the background level. Dr Nigam said the objective of the centre, was to provide utilisation of radiation energy for industrial applications. The radioactive source--eight pencils of cobalt-60 of 25,000 curies--was housed in a pool of water in a special chamber in the new building. The walls of the chamber are 1.7m thick in accordance with the specification laid down by BARC, he said. [Text] [Bombay THE TIMES OF INDIA in English 28 Apr 86 p 9] /12851

PAKISTAN

PRIME MINISTER SUPPORTS NUCLEAR PROGRAM

GF291810 Lahore JANG in Urdu 28 Apr 86 p 3

[Editorial: "Repeated Assurances"]

[Text] Speaking on the occasion of the opening ceremonies of the biggest Guddu thermal power station, Prime Minister Mohammad Khan Junejo said that friendly countries should help Pakistan to acquire atomic energy. He said that Pakistan will not be deterred by any obstacles put in its way to attain nuclear energy. Pakistan, a sovereign and independent country, is not bound to offer repeated assurances for its peaceful nuclear program. Availing himself of this opportunity, he also instructed the authorities concerned not to conduct any power outages during the month of fasting.

Pakistan is openly facing a most serious crisis in the energy field. This is adversely affecting its economy. In the course of government-authorized power outages industrial and agricultural production is seriously harmed, which causes increased unemployment. New industrial programs are also shelved due to a lack of energy. Pakistan has repeatedly assured the international atomic agency, the United States, and all other countries which aid Pakistan that Pakistan does not intend to use atomic energy to produce nuclear arms. But the Indian and Jewish lobbies are constantly working against us. The inspectors of the international atomic agency have always supported Pakistan's stand on this issue. Pakistan has always kept open for inspection its atomic installations by the members of the international atomic agency. Pakistan is also ready to sign the nuclear nonproliferation treaty and the treaty for keeping the Indian Ocean and South Asia a nuclear free zone provided India does the same. But India not only refuses to sign these treaties, it also actively engages in the production of nuclear arms. The international media support this view.

Mr Dean R Hinton, the U.S. ambassador, and Mr Schifferdecker, the U.S. consul general, speaking at the above-mentioned ceremonies have expressed their doubts regarding Pakistan's assurances and have said that the United States is ready to cooperate with Pakistan in nuclear energy provided Pakistan accepts the international safeguards regarding its peaceful nuclear programs. This stance by the U.S. ambassador notes his doubts on Pakistani intentions and on past assurances given in this respect. The United States should ask for such assurances from India.

The way that Prime Minister Junejo has explained Pakistan's stance in this respect amply portrays the independent and sovereign status of Pakistan. He is absolutely correct in saying that Pakistan is not now bound to offer repeated assurances.

/12929

CSO: 5100/4744

PAKISTAN

BRIEFS

IAEA TECHNICAL ASSISTANCE--The International Atomic Energy Agency has agreed to provide technical assistance worth \$450,000 to Pakistan. A decision to this effect was taken at the recently concluded meeting of the IAEA Board of Governors at Vienna. The chairman of Pakistan Atomic Energy Commission represented Pakistan at the meeting. The board, in response to a demand of Pakistan and other developing countries, also agreed to constitute a working group for the promotion of nuclear power in the less developed states. [Text] [Karachi Domestic Service in English 1005 GMT 9 Apr 86 BK] /9274

CSO: 5100/4741

SYRIA

BRIEFS

NUCLEAR REACTOR TRAINING COURSE--A training course on the basics of nuclear reactor technology held for a group of Syrian specialists ended at Poland's Atomic Energy Institute on 25 April. The course was set up at the request of, and was financed by, the Vienna-based International Atomic Energy Agency. [Text] [London MEED in English 10-16 May 86 p 27]/12828

CSO: 5100/4306

GABON

GOVERNMENT ABANDONS NUCLEAR POWER STATION PROJECT

AB151618 Paris AFP in French 1416 GMT 15 Apr 86

[Text] Libreville, 15 May (AFP) — Gabon has abandoned the plan to establish a nuclear power station on its territory, it was learned from a reliable Gabonese source on Thursday. The accident in Chernobyl "has affected people and it would be psychologically difficult to make people accept such a station in Gabon," this source stated, specifying that the head of state, Mr Omar Bongo, has accepted this idea.

It was recalled that Mr Bongo had asked France for the establishment of a nuclear station during President Francois Mitterrand's visit to Gabon in January 1983. The French Atomic Energy Department (CEA) — through the Societe Sofratone — had studied the possibility of establishing on an experimental basis in Gabon one or several reactors of the type that supply energy to nuclear submarines. In fact, the French nuclear sta-

tions of the PWR type (pressurized water) of 900 megawatts (Fessenheim in Alsace) or of 1,300 megawatts (Ponclun in Normandie) are out of proportion with Gabon's needs.

In 1985, the highest energy requirement noted for the entire Gabonese territory was about 200 megawatts, the Gabonese Ministry of Energy indicated. The project was then left in suspension and "has not been mentioned again for more than 1 year," a French diplomatic source has affirmed. French Cooperation Minister Michel Aurillac also affirmed during his recent visit to Gabon that this matter was not mentioned during the audience granted him by President Bongo.

But France was not the only country connected with the project because a West German project which provided for the addition of a nuclear research center to the station had also been presented, a Gabonese source indicated.

Whatever the system adopted, the necessary investment would have been such that the cost of electricity of nuclear origin would have been considerably higher than that of hydroelectric energy, Gabonese and Western sources have observed. Electric power production in Gabon is ensured 75 percent by the hydroelectric network and 25 percent by fuel oil- or gas-powered stations. According to the Gabonese Ministry of Energy, Gabon consumed 861 million kilowatt-hours of energy in 1985, that is about 50 times less than the network's present capacity. In its development plan, Gabon has provided for the construction of two additional hydroelectric power stations, one of (?100) megawatts at Ngoulmendjim in the Monts de Cristal (in the north Libreville) and the other at Poubara near Franceville (in the west of the country) where two stations are already in operation, a Gabonese source has specified.

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CSO: 5100/22

NIGERIA

GOVERNMENT TO SIGN NUCLEAR NONPROLIFERATION TREATY

AB150902 Lagos Domestic Service in English 0600 GMT 13 May 86

[Text] Nigeria is to sign the necessary clause in the nuclear nonproliferation treaty to enable her to expedite action on the nation's nuclear (?reactor) project. The minister of science and technology, Professor Emmanuel Emovon, announced this during a tour of the Center for Energy Research and Development at the University of Ife. He explained that this was the only condition which remains to be fulfilled.

The director of the center, Dr (Okumola Solawo), told the minister that about 1.5 million naira was required to install equipment already procured for the project. He stated that since its inception 10 years ago, more than 14 million naira had been spent on the project, while supplementary equipment will be procured as soon as funds are made available.

/9274
CSO: 5100/23

13 June 1986

SOUTH AFRICA

COUNTRY SENDS TREATMENT FOR CHERNOBYL VICTIMS

Johannesburg THE SUNDAY STAR in English 4 May 86 pp 1, 8

[Article by Carolyn McGibbon]

[Text] Russian health authorities this week sent an urgent SOS to South Africa appealing for scientific help to combat the catastrophic radiation releases after the Chernobyl nuclear disaster.

Latest news bulletins said a Russian suicide squad had been called in to extinguish the reactor blaze--and it was disclosed in South Africa that scientists of the University of Natal had sent to the Soviet Union details of life-saving therapy for radiation sickness.

However, this information could arrive too late for the Russian authorities to save many of the victims of radiation who have been exposed to higher than the lethal dose.

The South African therapy has been tested only on animals. Russian health authorities sent a request to scientists at Natal Medical School for details of their research and the files were sent to Moscow immediately.

America and Israel have shown interest in the research, and the scientists hope now that the South African authorities will also be interested.

The Sunday Star's Foreign News Service reports that the suicide team put out the blaze by dumping tons of water over the reactor.

Mr Christer Larsson, a Swedish scientific journalist working with satellite pictures from Kiruna, said: "The fire seems to be out, but the heat is still there. It looks as if they put out the fire by dumping tons of water on it. The men that did that, troops most likely, would be on a suicide mission.

"There is no way they could survive, no clothing that could protect them. They are dead men."

The South African discovery is based on experiments with mice, whose chances of survival after irradiation more than doubled when they were given the new medicine. This therapy has not been tried on humans suffering from radiation sickness, and disaster victims at Chernobyl could have been the first on whom it was tested.

The new therapy was developed in a laboratory at the University of Natal Medical School by an American professor, Stephen Gaffin, and a graduate medical student, Ms Michelle Wells.

Professor Gaffin estimated it could cost about R500 000 to provide sufficient medicine for 1 000 people.

Up until now no specific medicine has been developed for radiation sickness. Victims of radiation accidents have been treated in much the same way as patients with severe infections—they have been given antibiotics and carefully monitored. The only other known treatment is through expensive bone-marrow transplants.

Now there is hope through the new drug which can be manufactured from human blood.

A spokesman for the team of scientists said the treatment was aimed at patients who had been exposed to less than 1 000 rads of nuclear energy. Anyone hit by a higher dose would die within days.

The average dose that would kill a man in 450 rads—less than the energy needed to boil a teaspoon of water. One of the effects of radiation at this level is to damage cells lining the gut, releasing bacteria into the bloodstream which in turn produce poisons—endotoxins. The new medicine, says Professor Gaffin, produces antibodies to counter these endotoxins, which can wreak havoc.

Unknown members of people who have been exposed to radiation from the Chernobyl meltdown may not know they have had a lethal dose.

Initially they may have experienced loss of appetite, nausea, vomiting and headaches, but now feel no ill effects.

But harmful rays which have penetrated their bodies have damaged the intestines, destroying the protective lining and allowing bacteria and poisons into the blood.

Experiments on mice were done to try to neutralise these poisons.

The animals were flashed with between 300 and 1 000 rads and, after six days, given the new therapy.

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The reason for the delay in administering the new drug called Anti-lopopolysaccharide, or Anti-LPS for short, was to mimic the possible time-lapse until victims of a nuclear disaster received treatment.

Among the mice that were not given the therapy, the survival rate was less than 20 percent. The survival rate among the mice injected with Anti-LPS was 48 percent.

The effect of the drug was to kill the bacteria and neutralise the poisons, "buying time" for the gut to repair itself and stop further leakage into the blood.

Current research shows that the Russians have been experimenting with a similar approach, but their treatment needs to be given within two days of irradiation and appears to be less effective.

The drug pioneered at Natal's Medical School has yet to be tried on humans but scientists hope that because the gut linings of mice and men are similar, there could be corresponding results.

Medium-range radiation also damages cells in the bone marrow, and the scientists believe that bone-marrow transplants alone, or in conjunction with the new therapy, would significantly improve the chances of survival of nuclear disaster victims.

Latest news on the disaster is that satellite photographs processed by the Swedish Space Corporation at Kiruna in northern Lapland have indicated that the fire is out.

A corporation spokesman said: "The latest pictures we received indicate that the smoke from the scene of the disaster has diminished. It is difficult to say anything for certain, but what we have been able to deduce is that the entire plant has now been switched off."

Sweden's main fear now is for radioactive substances already on the ground.

/9317

CSO: 5100/24

SOUTH AFRICA

ESCOM CHAIRMAN DENIES PLANS FOR NEW NUCLEAR POWER STATION

MB070459 Johannesburg SAPA in English 2051 GMT 6 May 86

/Text/ Johannesburg, 6 May, SAPA—South Africa was not planning a new nuclear power station to come on stream before the next century, said ESCOM's /Electricity Supply Commission/ chairman Mr John Maree at a press conference today when questioned from the floor as to SA's intentions for future nuclear plants.

To have a nuclear station come on stream before the year 2000, "we would need to start commissioning one now," he said.

In fact, the opposite is true. ESCOM is shelving and delaying many of its more grandiose projects in order to trim its budgets.

Whether SA will run out of coal by the year 2050, is a speculation, as new deposits tend to be found.

ESCOM is currently deeply engrossed in cost-cutting exercises, reformulating its philosophies, planning new strategies and gearing up the gigantic parastatal into a slim-line—profitable business organization.

The new ESCOM is decentralized, with the megawatt hq functions being trimmed.

The 66,000 work force is to be axed to 60,000—although through natural depletion rather than sackings.

The middle-management strata was eliminated to allow for shorter lines of communication between the various outside divisions and top management.

The restructuring took ESCOM 4 months as compared to a similar exercise in the United Kingdom which took 3 years.

Better and stricter financial managements structures have been introduced.

/12228
CSO: 5100/21

BRIEFS

SITE SOUGHT FOR NUCLEAR PLANT--A spokesman for Escom said yesterday there was no indication at this stage when or if South Africa would get a second nuclear power station. He confirmed, however, that the Natal coastline was being included in a survey to find possible future sites. Public relations officer Mr Jan Roux said a survey was being made of the whole South African coastline "and there's no reason to believe that Natal is more likely to be chosen than elsewhere." He said: "This is a long-term thing, and what we are doing is identifying possible sites which may be used in the next century if needed." Mr Roux was commenting on a letter to the Editor sent to The Daily News by a "concerned" Pinetown resident, who referred to the Chernobyl nuclear power station disaster and said he understood Escom was considering the construction of a "second Koeberg" somewhere along the Natal South Coast. Mr Roux said Escom's objective was to satisfy the customers' needs for electricity in the most cost-effective way, subject to the national interests and to resource constraints. "We have to investigate all possibilities and at the moment nuclear power is part of our energy mix. "The coastline is the most economic area because of inland water constraints." Long-term planning was needed to co-ordinate possible sites into overall plans. Otherwise a site might turn out to be in the middle of a future city. [Text] [Durban THE DAILY NEWS in English 9 May 86 p 6] /12828

KOEBERG PLANS OUTLINED--Emergency plans to counter the effects of a nuclear accident at Koeberg were outlined by Health Minister Willie van Niekerk in Pretoria last night. Addressing the Medical Association of SA (Masa) AGM, he said Western nuclear reactors and those at Koeberg were developed not only to minimise accident possibilities, but also to limit the results. He said Escom's emergency plan was based on international standards and was regularly exercised. During an emergency situation, decontamination facilities were activated, injured people would be rushed to Tygerberg hospital and sirens, the SABC or Civil Defence mobile units would warn the public, he said. [Text] [Johannesburg BUSINESS DAY in English 13 May 86 p 3] /9317

CSO: 5100/24

FEDERAL REPUBLIC OF GERMANY

KARLSRUHE NUCLEAR RESEARCH CENTER EXPANDS HOT CELL PLANT

Duesseldorf HANDELSBLATT in German 5 Mar 86 p B7

[Article by nl: "Hot Cells Function with New Technology"]

[Text] The hot cell plant of the Karlsruhe Nuclear Research Center (KfK) has been enlarged by 25 percent. In addition to the new construction, the entire plant was modernized: central control engineering is expected to improve cost efficiency and safe operation of the facility. The building project took about 4 years to complete and cost approximately DM 16 million.

Hot cells are shielded, climate-controlled units in which radioactive materials can be handled by remote control. Different types of shields are used, depending on the degree of radioactivity and type of radiation of the material being examined. The KfK plant consists of five concrete cells which can handle radioactivity of up to 3.7×10^{17} becquerel (10^7 curie), and eight "lead forts," that is, cells protected by up to 20 cm of lead which can handle as much as 3.7×10^{13} becquerel (10^3 curie).

At the nuclear research center, these cells are mainly used for the development of radioactive materials. These materials, which range from fuel weighing a few grams to fuel elements of over 100 kg, can be studied there by remote control for structural composition, crystal structure, porosity, solidity, as well as chemical composition.

The handling is done by manipulators, i.e., remote control grip arms which can be equipped with tools. The spectrum here ranges from the electric master slave manipulator, with which the operator can perform the most precise work through force feedback, to the heavy load manipulator which can handle up to 1000 kg.

Now that the plant has been modernized, measured data obtained from the studies are fed into a central computer and processed. The same is being done with the plant's operational data, which is also processed and monitored by modern control engineering. Finally, this technology is also used to secure the safe physical operation of the plant.

The current expansion has made it possible for fuel elements from the compact sodium-cooled nuclear reactor plant to be transferred routinely into the hot cell facility and dismantled there. This is an important prerequisite for the subsequent reprocessing of breeding fuel which is to take place in a French reprocessing plant. Plans are being made for future testing of irradiated material samples which may contain the radioactive fuel tritium.

FINLAND

LOVIISA AUTHORITIES CONTINUE LICENSING SPENT FUEL STORAGE

Helsinki HELSINGIN SANOMAT in Finnish 7 Apr 86 p 9

[Article: "Nuclear Waste Will Remain Permanently in Hastholmen; Loviisa Permits Fuel Storage"]

[Text] Loviisa (HS)--The city of Loviisa will continue to permit the storage of nuclear waste on the grounds of the Imatran Voima [Imatra Power Company] plant in Hastholmen. The Loviisa Municipal Council has decided on the matter. The city's environmental committee would, however, have preferred to get rid of the highly radioactive waste, that is, spent fuel.

Imatran Voima has had a license to temporarily store spent fuel in the nuclear power plant's storage basins, but not to remain in Loviisa permanently.

The fuel is cooled in water basins and usually shipped to the Soviet Union after 5 years of storage. Since damaged fuel clusters cannot, however, be transported, they will remain in Loviisa permanently. Imatran Voima has looked into the possibility of burying the spent fuel in bedrock at a depth of several hundred meters.

Mid and low-level radioactive waste is also generated in the nuclear power plant in connection with plant maintenance. It has already been agreed that holes will be blasted in bedrock to deposit such paper and cloth waste. The waste in question is now in surface storage.

11,466
CSO: 5100/2520

FINLAND

BRIEFS

LOVIISA CONDENSER PIPES REPLACED--Loviisa (HS)--Some of the condenser pipes for the 8-year-old number-one nuclear power plant in Loviisa are being replaced. To be replaced when annual maintenance is performed, the new pipes will withstand seawater better than the old ones. Maintenance operations on the Loviisa number-two unit will begin at the end of this month or the beginning of next month. During the maintenance operations 900 workers will be working on the plant grounds in addition to Imatran Voima's (IVO) [Imatra Power Company] own people. The IVO power plants in Loviisa normally employ 400 permanent payroll workers on the job, provided by contractors. [Text] [Helsinki HELSINGIN SANOMAT in Finnish 7 Feb 86 p 8] 11466

CSO: 5100/2520

ITALY

GOVERNMENT, PRESS RESPOND TO CHERNOBYL ACCIDENT

Craxi Offers Technical Help

LD022256 Rome Domestic Service in Italian 2200 GMT 2 May 86

[Excerpts] Regarding the Chernobyl disaster, the Soviet authorities assure that everything is normal and under control. A message from Craxi to Gorbachev was delivered by the Italian ambassador to the Soviet deputy foreign minister. The latter reiterated that the situation is under control and refused Italy's offer of technical help. There is no need for it, he said.

L'UNITA on 'Absurd' News Delay

AU021039 Rome ANSA in English 1020 GMT 2 May 86

[Text] (ANSA) Rome, May 2 -- The Italian Communist Party has assailed Soviet authorities for their "faultful delay" in breaking the news of the nuclear reactor accident in Chernobyl. A front-page editorial in Thursday's edition of the party's newspaper L'UNITA charged Moscow of having been "guiltily slow" in disclosing the accident to the Soviet public and abroad. As a result of the official media blackout, "the average Soviet citizen had to turn to other, non-official sources, and add a good amount of his own imagination" to figure out what happened.

"Information becomes a rare commodity when you have to seek it out on the black market", said editorialist Fabio Mussi, assistant chief editor of L'UNITA. The Soviet habit of hushing up events "becomes all the more anachronistic and absurd" when you are dealing with "serious and important" news. The worst thing, the editorial concluded, is that "the world still does not know anything about the real situation in Chernobyl the Kiev area except for what can be gathered by conjecture".

Precautionary Measures Noted

LD021834 Rome International Service in Italian 1730 GMT 2 May 86

[Text] The civil protection minister, Zamberletti, today held a press conference in connection with the aftermath of the Chernobyl accident and the precautionary measures to be adopted. Here is a report from the Civil Protection Ministry by Augusto Milana:

If the weather forecast is right, the air which is carrying the radioactivity released by the Chernobyl plant will remain over Italy for at least another 48 hours. The new element is the spreading of radioactivity, at levels two or three times higher than normal, throughout the territory, even though these levels are well below the danger threshold. The persistence of bad weather has kept the radioactivity over our country, that is, it did not move further away as originally expected. The recent rains have caused the radioactive nuclides to penetrate the soil. With this in mind, people have been advised, for reasons of hygiene and as a precautionary measure, not only to wash fruit and not give fresh fodder to cattle, but also not to eat vegetables and not to give fresh milk to children under 10. In this case, powder or UHT milk prepared before 2 May 1986 is recommended.

Naturally, these suggestions, as Zamberletti said, are applicable for a limited period of time. If Sunday, as everyone hopes, the winds push the radioactive cloud toward the east, then from then on a period of 12 days will have to elapse before things can be said to be back to normal.

Agriculture Imports Restricted

LD021848 Rome International Service in Italian 1730 GMT 2 May 86

[Text] Today Health Minister Degan banned by decree the import of animals, animal products, and vegetables from the Ukraine. The import of animals and game from other eastern and Scandinavian countries has been prohibited. Government certifications stating that the products in question were processed before 30 April are necessary for animal products and vegetables.

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CSO: 5100/2524

SPAIN

ALMARAZ REACTOR SHUTS DOWN FOLLOWING WATER LOSS

Shutdown Attributed to External Failure

Madrid EL PAIS in Spanish 30 Apr 86 p 20

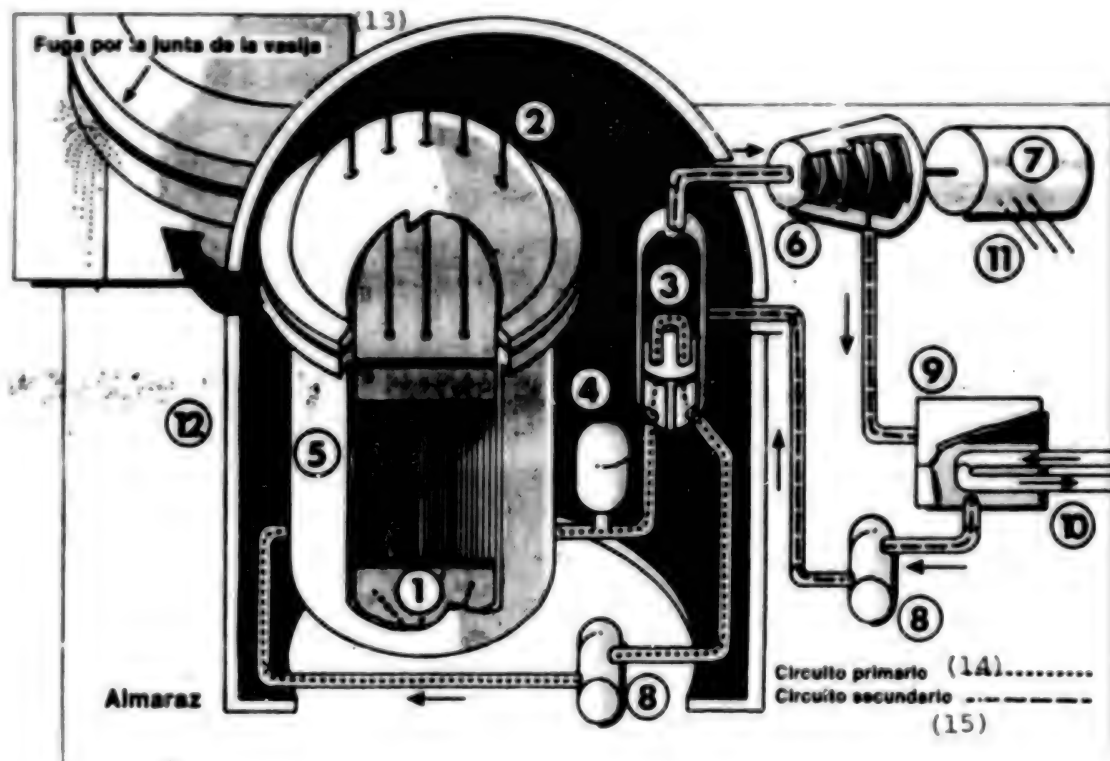
[Article by Rafael Fraguas, special correspondent]

[Text] Almaraz. Reactor no 1 of the Almaraz nuclear power plant, located in Caceres province about 200 kilometers southwest of Madrid, has been shut down since 21 April and will continue in this status for 2 more weeks. According to the plant's directors, this automatic shutdown was caused by the failure of a transformer in a Madrid electrical substation. This shutdown was then used to investigate a loss of radioactive water that circulates inside the reactor. This loss had been reported by the environmental association, ADENEX [Association for the Protection of Nature and Resources in Extremadura], on 14 April. Charges that the magnitude of the water loss may have caused this extended shutdown have been denied by the Almaraz management.

The Almaraz nuclear power plant, located in Caceres province, employs 420 workers and has a generating capacity of 1,860 MWe. The plant's management told this newspaper that the causes of the shutdown of the Almaraz reactor no 1 in the early morning of 21 April were solely attributable to the failure of a transformer in a major electrical substation located in the vicinity of Madrid, and not to the loss of water flow which was detected at the end of March in a flange attached to the container housing the plant's radioactive fuel and water. Six 400-kilovolt lines and two 220-kilovolt lines link Almaraz to the national high voltage network. The town of Almaraz has 1,312 inhabitants.

Antonio Bustamante, 35 years old, an economist, administrator and spokesman for the nuclear power plant, indicated that the Almaraz management had decided to make use of the temporary automatic shutdown caused by this external electrical failure to check the internal anomaly detected earlier in the flange of the reactor's pressure container, which in recent days had caused a loss in the irradiated water flow inside the containment device. Bustamante

also reported that the reactor was operating at 100 percent of its capacity when the automatic shutdown occurred, following an electrical failure in the Madrid substation, "which also triggered shutdowns of the Zorita and Cofrentes plants," he noted.



Key:

1. Reactor core
2. Control rods
3. Moisture separator
4. Drier
5. Container
6. Turbine
7. Alternator
8. Pump
9. Condenser
10. Cooling water
11. Electrical energy outlet
12. Shielding
13. Leak through container connection
14. Primary circuit
15. Secondary circuit

Antonio Vazquez, head of the Almaraz power plant, said that he could neither "confirm nor deny" that the loss of water flow, estimated at about 60 cubic meters of the 250 cubic meters that circulate through the nuclear container, had released gases, saying it was necessary to wait for completion of the checkout in order to evaluate that possibility, whose importance he de-emphasized. "The radioactive water was reabsorbed," stated Vazquez.

According to Antonio Bustamante, that loss, estimated at 34 liters per hour at the time when the incident occurred at the Madrid substation, was irrelevant. He emphasized that in itself it could not in any way cause an automatic reactor shutdown because of its "lack of importance." He pointed out that the loss of the container's water flow "at its maximum moment did not exceed 1.4 percent of the permissible level set by the operating specifications, 2,268 liters per hour."

Bustamante did report that a porosity of 1/3 millimeter had been found in the container's second ring. For that reason, the plant's management decided to make use of the shutdown caused by electrical induction, extending the initial shutdown for 2 more weeks, in order to ensure the reactor's tight seal.

According to Santiago Hernandez, 40, a highway engineer and president of the antinuclear environmentalists group, ADENEX, it was the complaint his group made on 14 April about the water loss which led to the information later released by the plant.

Earlier Problems

In the past there has been great touchiness toward Almaraz in the region, which has been greatly reduced today. The plant was fined twice and there have been irregularities in its operations. The fact that the daily volume of electricity generated by the plant is close to a value of 100 million pesetas is worthy of note. This earlier record lends some support to the hypothesis that the failure in the flange and the water flow loss had reached a sufficient level to force a permanent shutdown of the plant. Thus the Madrid electrical failure could have been an excuse to cover up a new irregularity.

Bustamante vigorously denied that supposition. "We are serious people. We are responsible for what we do and for what we say. We have a competent professional staff working here in Almaraz. The water flow loss in March, by itself, never warranted a permanent shutdown. Nonetheless, because of our sense of responsibility, we made use of the reactor shutdown triggered by external electrical causes, and extended it by about 3 weeks. During this period we are going to investigate this loss in depth. Believe me," he added, "there was not the slightest risk to anyone; a third of the total investment in this plant is spent for safety. And we are the people most concerned about safety here."

Nuclear Power Plant Operation

Madrid EL PAIS in Spanish 30 Apr 86 p 20

[Article by Rafael Fraguas]

[Text] Almaraz. The Almaraz nuclear power plant has two reactors, each capable of generating 2,696 thermal megawatts, 930 MW of electricity, every day, using the caloric energy transmitted by radioactive uranium to a series of water circuits.

About 73 tons of radioactive uranium in the form of rods are placed inside a shielded, hermetically sealed container, inside which liquid water circulates. This water is kept at a temperature of 348 degrees C, and is under high pressure--157 kilograms per square centimeter, which prevents it from evaporating. The radioactive uranium generates a huge amount of energy in the form of heat, which heats the water circulating in the first circuit. This water is highly radioactive.

By physical radiation, the water heated by uranium transmits its high heat to the water flowing in another circuit, parallel to but independent of the primary circuit. This is called the secondary circuit. The water inside this second circuit receives the heat from the primary circuit, cooling it.

A heat exchanger transforms the water heated by radiation into steam. The steam drives an attached turbine. The turbine converts the energy in the form of heat into mechanical energy, producing electricity through a process similar to a generator that electrically powers a bicycle headlight. The electricity is then transmitted by Spain's high voltage network.

The second water circuit is cooled by a third circuit, using water coming from the Arrocampo stream, near the plant and the Tagus River.

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CSO: 5100/2523

FUEL RODS IN TWO NUCLEAR REACTORS FOUND TO HAVE HOLES

Stockholm NY TEKNIK in Swedish 10 Apr 86 p 2

[Article by Tommie Ekstrom]

[Text] Sweden's two newest nuclear power plants, Forsmark 3 and Oskarshamn 3, which started operations in the fall of 1985, leak radioactivity internally. There are holes in the fuel rods, and radioactive substances escape into the reactor water, which actuates the turbines.

It is true that the contents of radioactive iodine is well below the limit value in both reactors but it is nevertheless higher than normal levels during the first working year.

Damage to the fuel of individual rods has previously been found in all Swedish nuclear power plants, but the Nuclear Power Inspection Board is concerned because the problem started already last fall, merely a few months after the commercial start of the plants.

"Tests, furthermore, show that there are holes in the rods of both reactors. For we have found neptunium 139, which is a substance that is formed in nuclear fission. That means that the uranium dioxide within the rods has direct contact with the reactor water."

The fuel rods consist of uranium dioxide pellets which are 1 cm high and 1 cm in diameter. They are stacked within a 4-meter high zirconium alloy-clad tube (a 0.8 mm thick alloy of zirconium, iron, chromium and nickel, looking like stainless steel). The tube is stopped up at either end by means of welds.

Both sister reactors have 42,000 rods each. They are located in zirconium-alloy-clad tubes, in clusters of 64 rods.

The zirconium alloy-clad tubes are made by the Swedish company of Sandvik and the German company of Mannesmann, while Asea Atom inserts pellets, welds rods together into tubes and provides the entire fuel core.

The reactor water soars to a temperature of 286 degrees Centigrade when reaching the rods, which are between 10 and 30 degrees Centigrade hotter.

Have to Be Shut Down

If a dramatic increase in the radioactivity within the reactors occurs, they will have to be shut down, but the nuclear power plants expect to be able to replace the damaged rods during the annual revision during the summer, when they will have to be shut down anyway.

It is possible that it is merely a single rod with a large hole that is causing the leakage within the nuclear power plants, but it is likely that, in the case of Forsmark, it is a question of approximately 50 damaged rods and, in the case of Oskarshamn, 75 rods. And it is not likely that the defective rods are located in the same tube, which would simplify the replacement.

Normally, one fifth of the fuel is replaced annually, when it is considered to have been burned up.

The costs to the nuclear power plants will increase with the leakages. The supplier, Asea Atom, will incur costs of 2 million kronor per tube and approximately an additional 4-5 million kronor in inspection and replacement costs.

The operation of the reactors, incidentally, is stated to have gone smoothly, no high effects having been recorded. The water has been pure and no more corrosive than ordinary water.

The damage may have been caused by vibrations and weaknesses in the plug welds of the rods.

No radioactivity is leaking into the environment, but the reactor water and the turbines are becoming increasingly radioactive.

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CSO: 5100/2519

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